Mounting Feasa LED Analyser

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About this Manual

This Manual is applicable to Feasa Led Analysers range of products.

The **ICT** Models : Feasa 3I, Feasa 5I, Feasa 6I, Feasa 10I & Feasa 20I.

The **High Bright ICT** Models : Feasa 3IB, Feasa 5IB, Feasa 10IB & Feasa 20IB.

The **Functiona**l Models : Feasa 3F, Feasa 5F, Feasa 6F, Feasa 10F & Feasa 20F.

The **High Bright** USB Models : Feasa 3FB, Feasa 5FB, Feasa 6FB, Feasa 10FB & Feasa 20FB.

The **Low Light** Models: Feasa 3A, Feasa 5A, Feasa 6A & Feasa 10A.

The **RGB** Models: Feasa 3RGB, Feasa 5RGB, Feasa 6RGB & Feasa 10RGB.

The **InfraRed** Models: Feasa 3-IR, Feasa 3-IRP, Feasa 10-IR, Feasa 10-IRP & Feasa 20-IR, 20-IRP.

The **Display Analyser** Models: Feasa 10-D2, Feasa 06-D2, Feasa 03-D2 & Feasa 01-D2,

Feasa operates a policy of continuous development. Feasa reserves the right to make changes and improvements to any of the products described in this document without prior notice.

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1.0 Feasa ICT Physical Dimensions & Wiring Details

Description 20I & 20IB:

The Feasa 20-I and 20-IB units are 20 Channel Led Analysers with Serial (3 pin) and an ICT (20 pin) Interfaces. The unit can measure up to 20 Leds simultaneously. The analyser measures the parameters of the Led by transferring the light from the Led under test to the analyser via a 1mm Plastic Optical Fiber (POF).

Physical Layout:

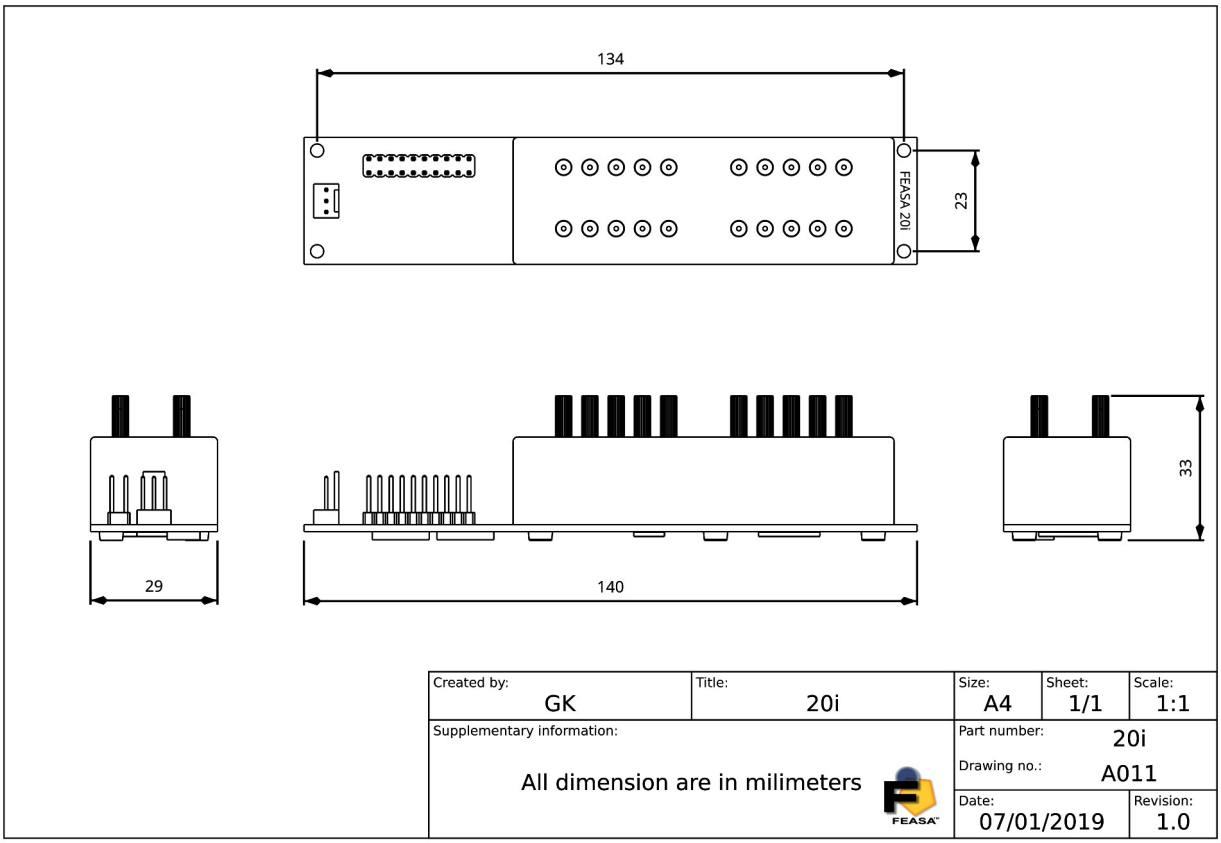

Figure 1.0

Figure 1.0 shows the physical layout of the 20 Channel Analyser. The fibers are labelled 1-20. There are four mounting holes which will accept M3 screws as shown.

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Description 3i – 10i & 3ib - 10ib:

The Feasa 3,5,6,10-I and 3,5,6,10-IB units have Serial (3 pin) and an ICT (20 pin) Interfaces. The units can measure 3,5,6 or 10 Leds simultaneously. The analyser measures the parameters of the Led by transferring the light from the Led under test to the analyser via a 1mm Plastic Optical Fiber (POF).

Physical Layout:

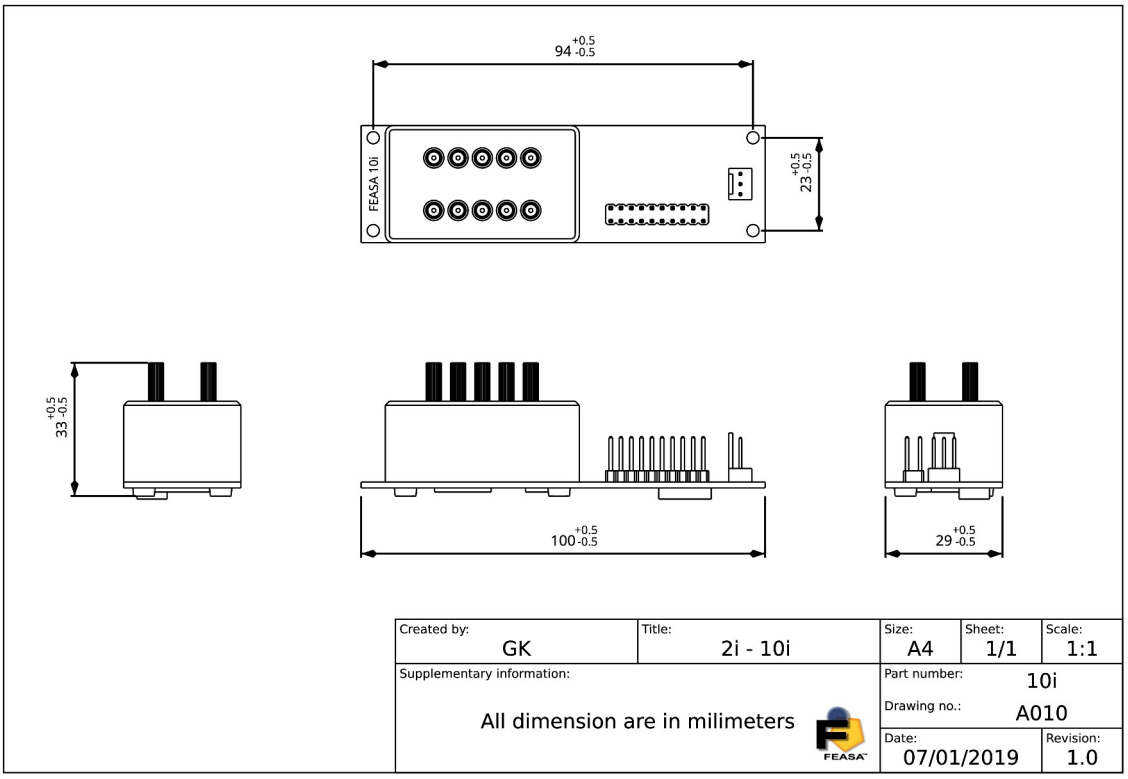

Figure 1.1

Figure 1.1 shows the physical layout of the 3,5,6,10 Channel Analyser. The fibers are labelled 1-10. There are four mounting holes which will accept M3 screws as shown.

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Power Requirements:

The Power requirements for the unit are 5V DC @ 250mA. When power is applied to the Analyser a Green LED will light to indicate it is ready for testing. **Do NOT exceed 6V I/P**

20 pin connector Power Wiring Locations:

19	Power	VCC	Power Supply 5V DC
20	Ground	GND	Ground

Figure 1.2

Serial Interface Wiring:

Please use the Serial Cable *LA-SER-01* provided with the unit. A wiring detail is located on Figure 1.3. Power to the unit in this mode must be applied to pins 19 (5V) and 20 (GND) on the 20 pin ICT connector.

Serial Connector (RS232C)

Pin	*Signal*	*Pin on 9-Pin D-type*
1	Tx from LED Analyser	2
2	Rx from LED Analyser	3
3	GND	5

Figure 1.3

ICT Wiring:

If using the ICT mode connect the Led Analyser to the ICT machine(Agilent, Genrad, Terrydyne etc.) using the 20pin JP3 connector on the board. Figure 1.4 has a detail of the wiring instruction.

ICT Connector JP3

Pin	Type	Name	Function
1	Output	Ser_Out	Synchronous Serial Output
2	Input	Ser_In	Synchronous_Serial Input
3	Input	SCK	Synchronous Serial Clock
4	Ground	GND	System Digital Ground
5	Input	Reset	Reset input
6	Input	/OE	Output Enable – Active low
7	Input	Ex_Trig	External Trigger
8	Input	PWM_bar	Select PWM mode - Active low.
9	Input	Addr0/LA_Select	Fiber Address 0 (also used for Synchronous Serial mode)
10	Input	Addr1	Fiber Address 1
11	Input	Addr2	Fiber Address 2
12	Input	Addr3	Fiber Address 3
13	Input	Addr4	Fiber Address 4
14	Input	/WE	Active Low.
15	Output	Int_freq	Frequency Out Square wave for Intensity
16	Output	Color_freq	Frequency Out Square wave for Color
17	Output	Sat_freq	Frequency Out Square wave for Saturation
18	Output	RY_BY	Ready Busy Output (Also Used for Syncronous Serial mode)
19	Power	VCC	Power Supply 5V DC
20	Ground	GND	Power Supply Ground

Figure 1.4

Make sure Pins 4 & 20 GND are wired to System Ground and also ensure this pin is wired to the Agilent PSU GND that is used to power the Analyser.

One method of connecting the Led Analyser to an Agilent / GenRad or Terradyne system is to use a 20way ribbon cable from the Feasa -I JP3 to a 20 way transfer connector on the Fixture bed and then from the transfer connector to the machine Interface pins. The overall length of the Ribbon Cable and internal Fixture wiring should not exceed 1 meter.

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2.0 Functional Analyser Range Physical Dimensions & Wiring Details

Description 20F, 20FB:

Figure 2.0 shows a 20 channel Functional and High Brightness Led Analysers. They all have mini usb, Serial Interfaces and Trigger Inputs at the front and they have Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 1mm Plastic Optical Fiber (POF) for Functional & High Bright and 1.1mm Glass fiber for the Life Tester Analyser. The standard Fiber length is 60cm.

The Functional Led Analysers is housed in a Silver aluminium case with mounting brackets. The High Brightness Functional Analysers is housed in a Black aluminum case with mounting brackets. The overall dimensions of the units are shown in Figure 2.0. Allow 60mm of height clearance to route the Fibers from the Analyses.

Physical Layout:

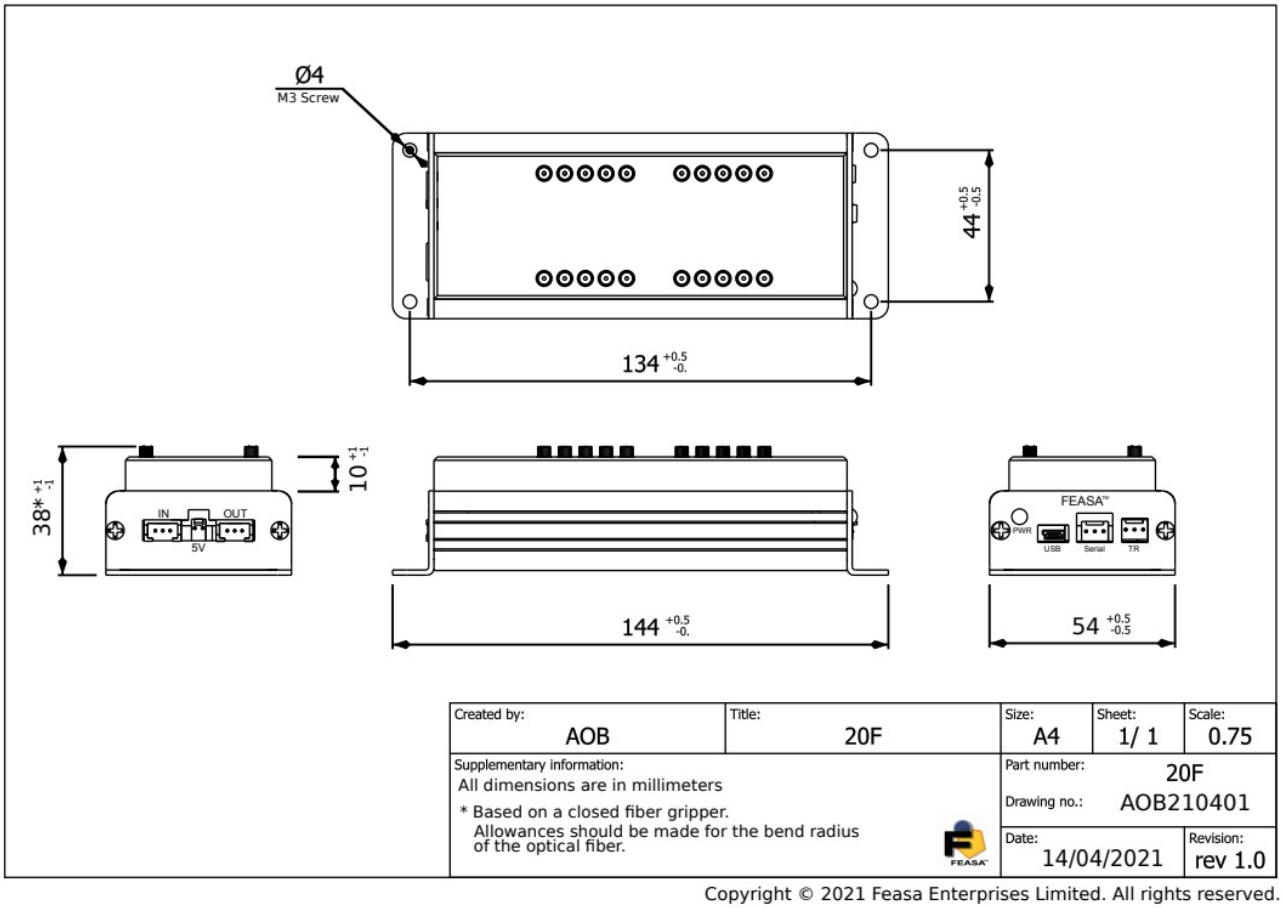

Figure 2.0

The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

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Description 3F – 10F & 3FB - 10FB:

Figure 2.1 shows the 3 - 10 channel Functional and High Brightness Led Analysers. They all have mini usb, Serial Interfaces and Trigger Inputs at the front and they have Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 1mm Plastic Optical Fiber (POF). The standard Fiber length is 60cm.

These Functional Analysers come housed in a Silver aluminium case with mounting brackets. The High Brightness Functional Analysers come housed in a Black aluminum case with mounting brackets. The overall dimensions of the units are shown in Figure 2.1. Allow 60mm of height clearance to route the Fibers from the Analyses.

Physical Layout:

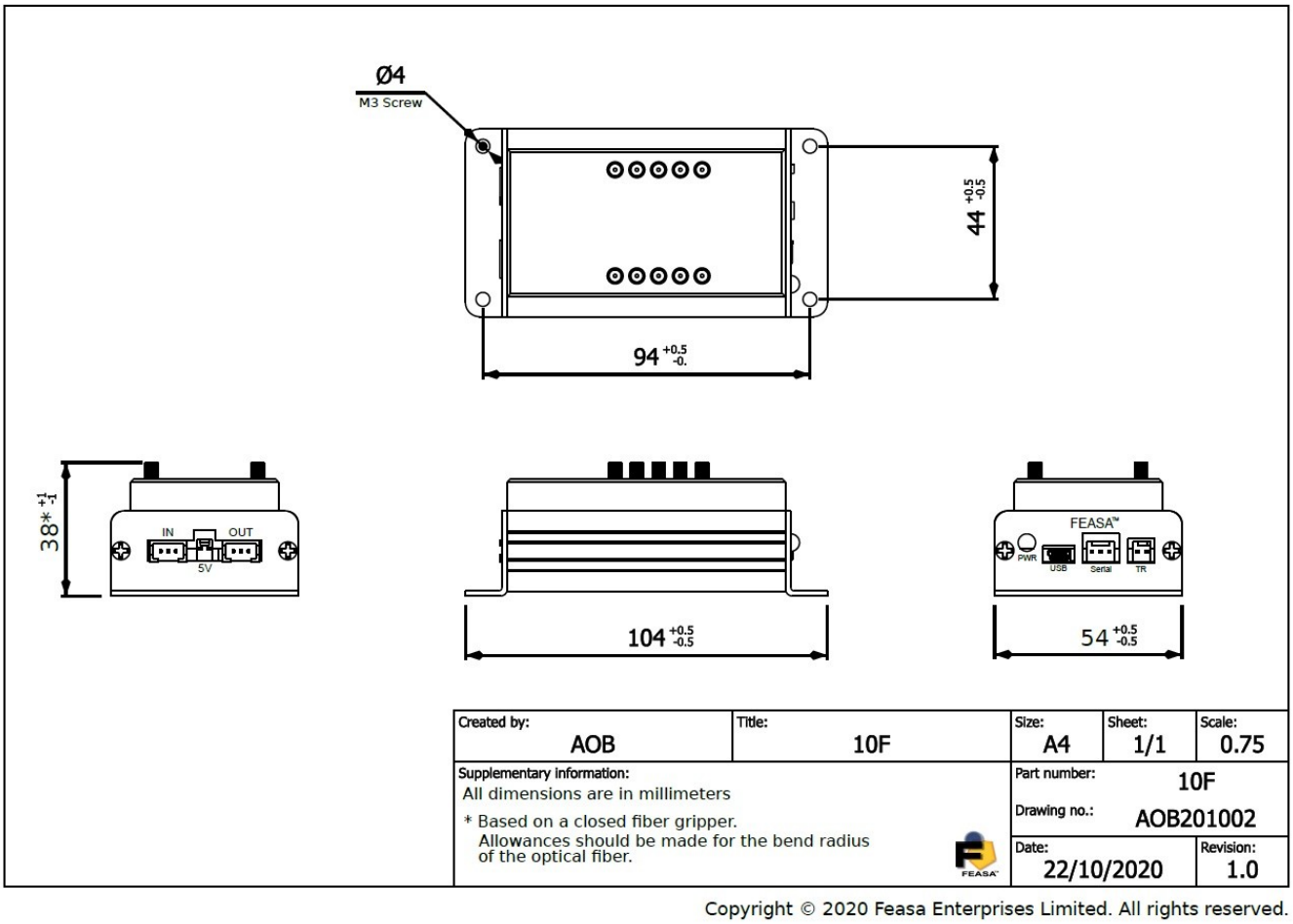

Figure 2.1

The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

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Front / Rear Connections

This shows the layout of the Connectors viewed from the edge of the board.

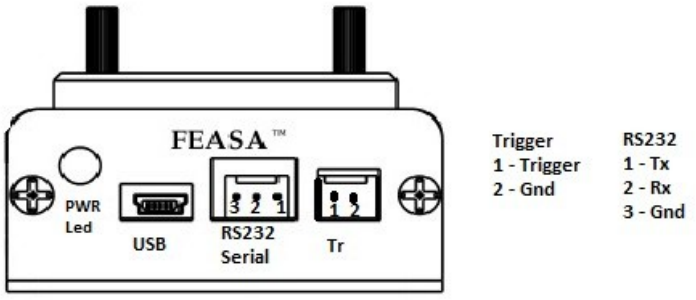

Figure 2.2 (Front Panel).

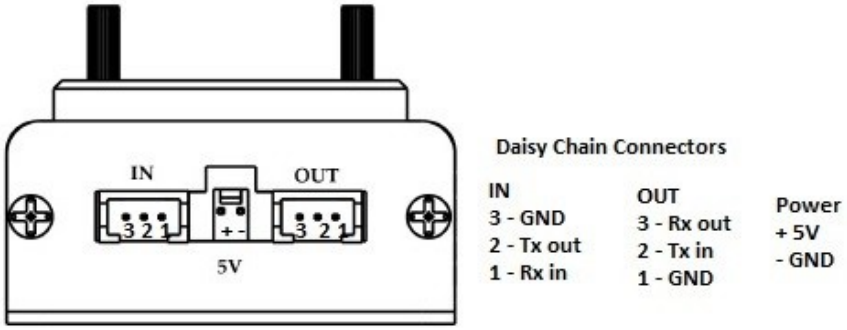

Figure 2.3 (Rear Panel).

Power Requirements:

The Power requirements for the Analyser are 5V DC @ 250mA. Do **NOT Exceed 6V** as this will damage the Analyser. If the USB Interface is used then the Analyser will draw its power from the USB Port on the Computer. If the Serial Interface is used then the Analyser must be supplied power through the 2-pin Power connector. When power is applied to the Analyser a Green LED will light to indicate it is ready for testing.

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Serial Interface Wiring:

Serial Connector (RS232C)

Pin	*Signal*	*Pin on 9-Pin D-type*
1	Tx from LED Analyser	2
2	Rx from LED Analyser	3
3	GND	5

Figure 2.4

Power Connector JP5

Pin No	*Signal*
1	Power (5V DC)
2	GND

Figure 2.5

Power is applied to pins 1 and 2.

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Trigger Port Control:

The Feasa Led Analyser includes a Trigger function that allows an external signal to trigger a capture. The Trigger function must first be enabled by sending commands to the Led Analyser. The capture is triggered by a high-to-low transition on the Trigger Pin.

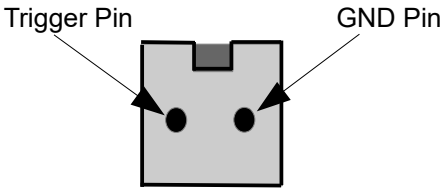

Figure 2.6

The layout of the Trigger Connector is shown above in figure 2.6. The trigger is activated on the Trigger Pin. This pin has an internal pull-up resistor to 3.3V. The Trigger is activated by driving this pin to GND.

Trigger Connector

Pin	***Signal***
1	Trigger Pin
2	GND

Figure 2.7

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Daisy Chain Ports:

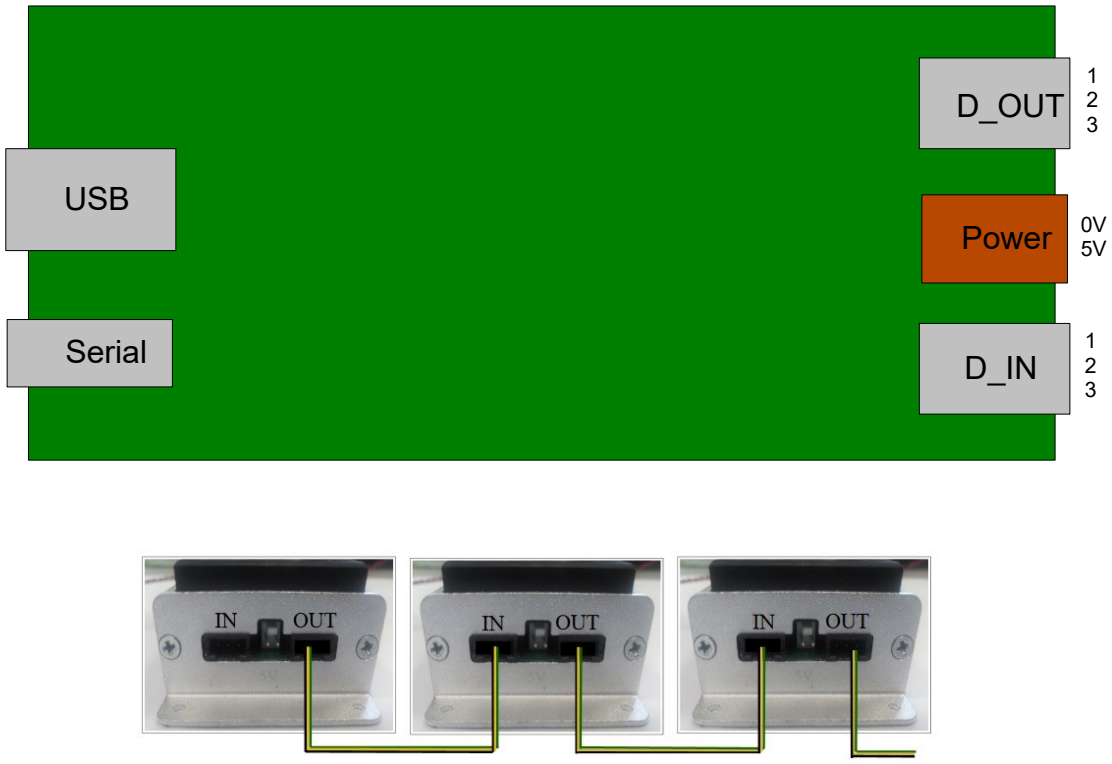

Figure 2.8

The Daisy Chain Function allows the end user to connect more than 1 analyser to a single USB port. Use the Daisy Chain Cables provided to connect each analyser to the next. The first unit in the chain is connected to the USB or Serial port. The D_Out Connector on the 1st unit is connected to the D_IN on the 2nd unit and so on for each analyser in the chain. If the first unit is connected to the usb port then its power is got from the USB of the PC. If however you are connecting the 1st unit through the Serial port then you will need to supply 5V separately. Each subsequent analyser in the chain will require a 5V source connected to the Power Connector also. Connectors are shown on the right-hand side of figure 2.8. The Power Connector JP5 is used to supply +5V DC to each Analyser in the chain. Allow 250mA @ 5V for each Analyser and ensure the wiring is adequate to supply the current without incurring large voltage drops. **For reliable operation it is necessary to have 5V at the Power Connector of each Analyser**.

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Daisy Chain Pin-out:

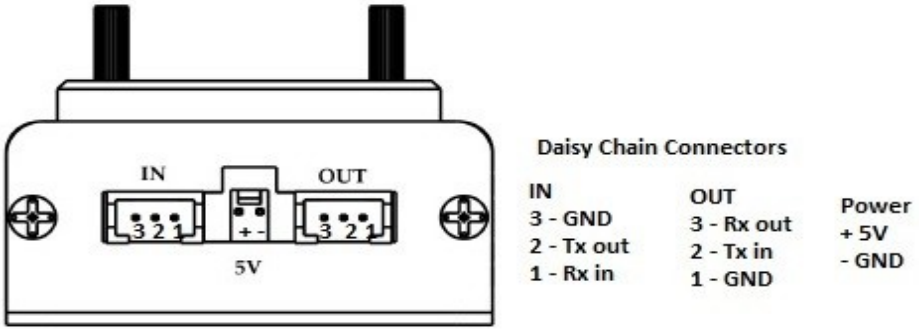

Figure 2.9

IN	D_IN	D_OUT
1	RX_in	RX_out
2	TX_out	TX_in
3	GND	GND

Figure 2.10

Figure 2.9 shows the layout of the Connectors viewed from the edge of the board. The *GND* line of *D_OUT* is connected with the *GND* line of *D_IN*, the *RX_out* of *D_OUT* is connected to *RX_in* of *D_IN* and the line *TX_in* of *D_OUT* is connected to the line *TX_out* of *D_IN*.

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3.0 Functional Infra-Red Range Physical Dimensions & Wiring Details

Description 20IR & 20IRP:

Figure 3.0 shows a 20 channel Infra-Red Led Analysers. It has a mini usb and Serial Interface Inputs at the front and it has Daisy Chain and Serial Power connections at the rear. The analyser measures the parameters of the Led by transferring the light from the Led under test to the analyser via a 1mm Plastic Optical Fiber (POF) or 1.1mm Glass Optical fiber. The standard Fiber length is 60cm.

The Infra-Red Analyser comes housed in a Red aluminium case with mounting brackets. The overall dimensions of the units are shown in Figure 3.0. Allow 60mm of height clearance to route the Fibers from the Analyses.

Physical Layout:

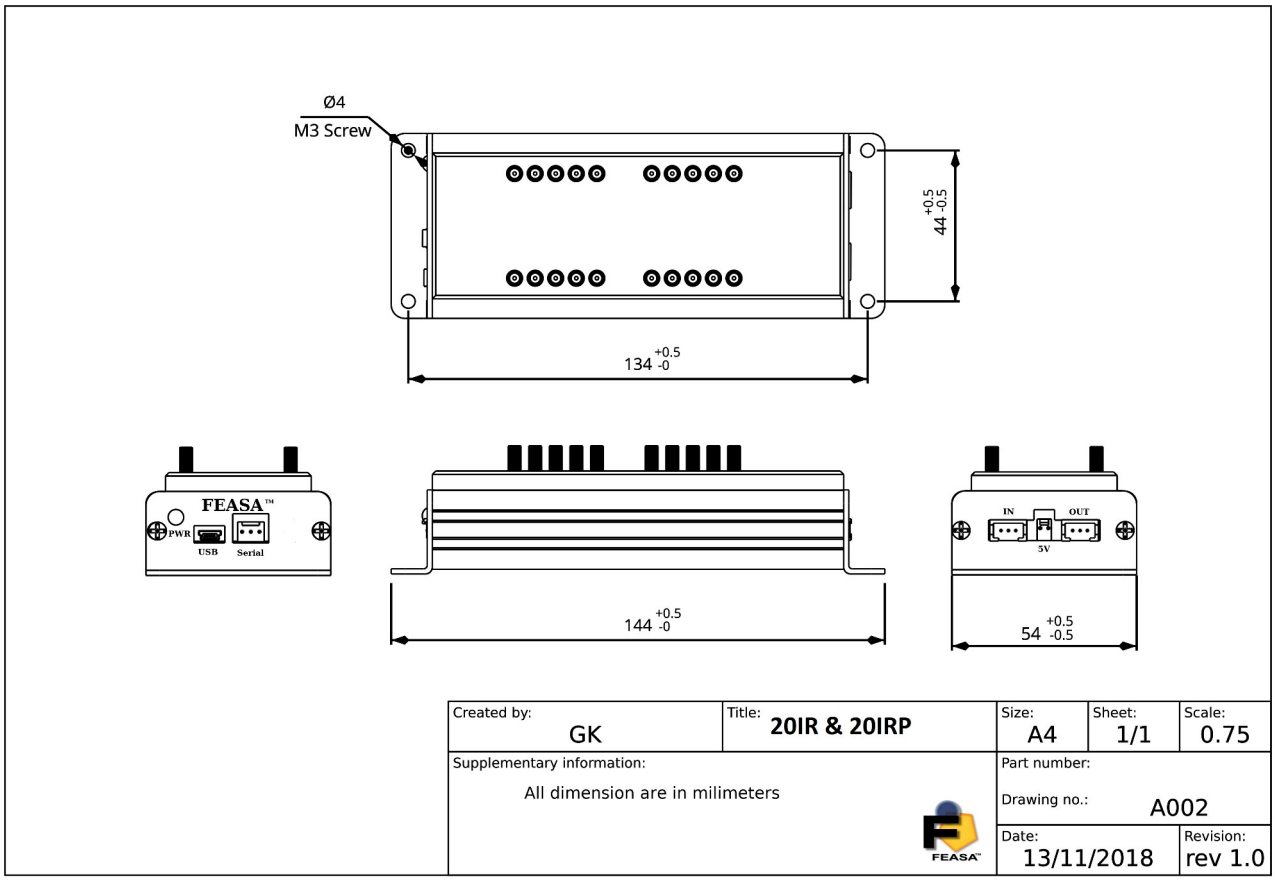

Figure 3.0

The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

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Description 3IR - 10IR & 3IRP - 10IRP:

Figure 3.1 shows a 3 & 10 channel Infra-Red Led Analysers. They have mini usb and Serial Interfaces Inputs at the front and they have Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 1mm Plastic Optical Fiber (POF) or 1.1mm Glass fiber. The standard Fiber length is 60cm.

These InfraRed Analysers come housed in a Red aluminium case with mounting brackets. The overall dimensions of the units are shown in Figure 3.1. Allow 60mm of height clearance to route the Fibers from the Analyses.

Physical Layout:

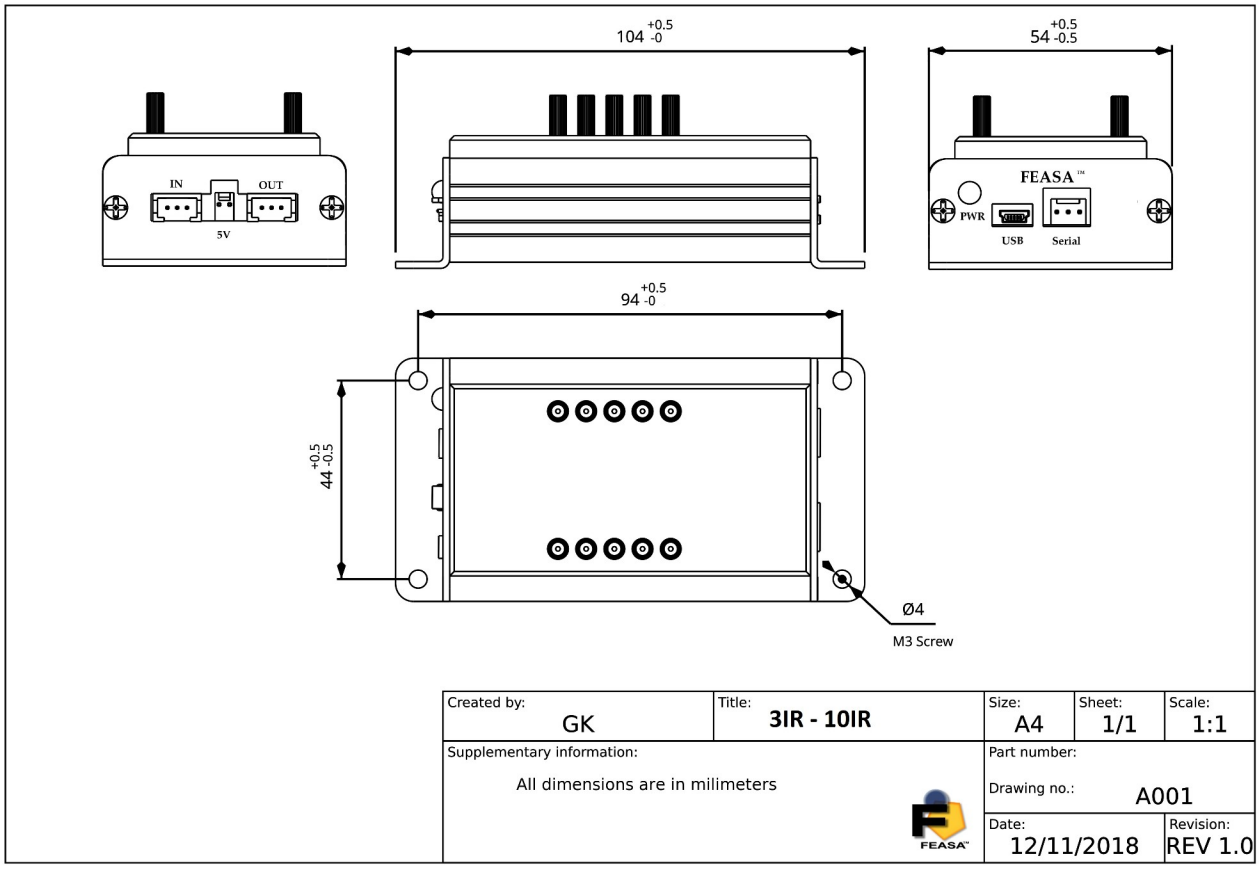

Figure 3.1

The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

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Front / Rear Connections

This shows the layout of the Connectors viewed from the edge of the board.

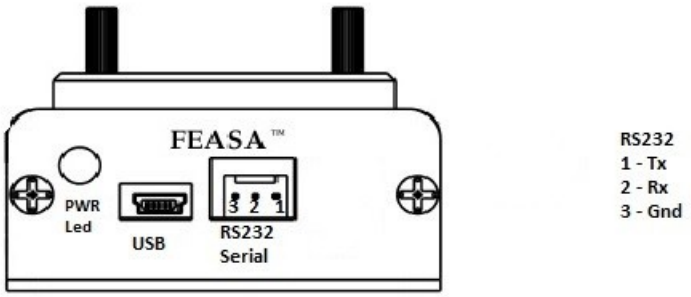

Figure 3.2 (Front Panel).

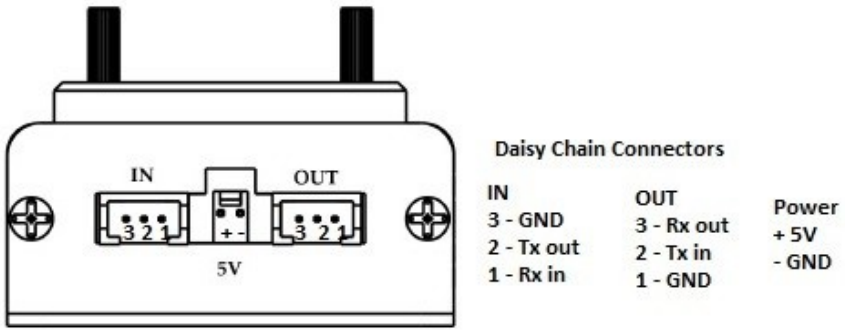

Figure 3.3 (Rear Panel).

Power Requirements:

The Power requirements for the Analyser are 5V DC @ 250mA. Do **NOT Exceed 6V** as this will damage the Analyser. If the USB Interface is used then the Analyser will draw its power from the USB Port on the Computer. If the Serial Interface is used then the Analyser must be supplied power through the 2-pin Power connector. When power is applied to the Analyser a Green LED will light to indicate it is ready for testing.

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Serial Interface Wiring:

Serial Connector (RS232C)

Pin	*Signal*	*Pin on 9-Pin D-type*
1	Tx from LED Analyser	2
2	Rx from LED Analyser	3
3	GND	5

Figure 3.4

Power Connector JP5

Pin No	*Signal*
1	Power (5V DC)
2	GND

Figure 3.5

Power is applied to pins 1 and 2.

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Daisy Chain Ports:

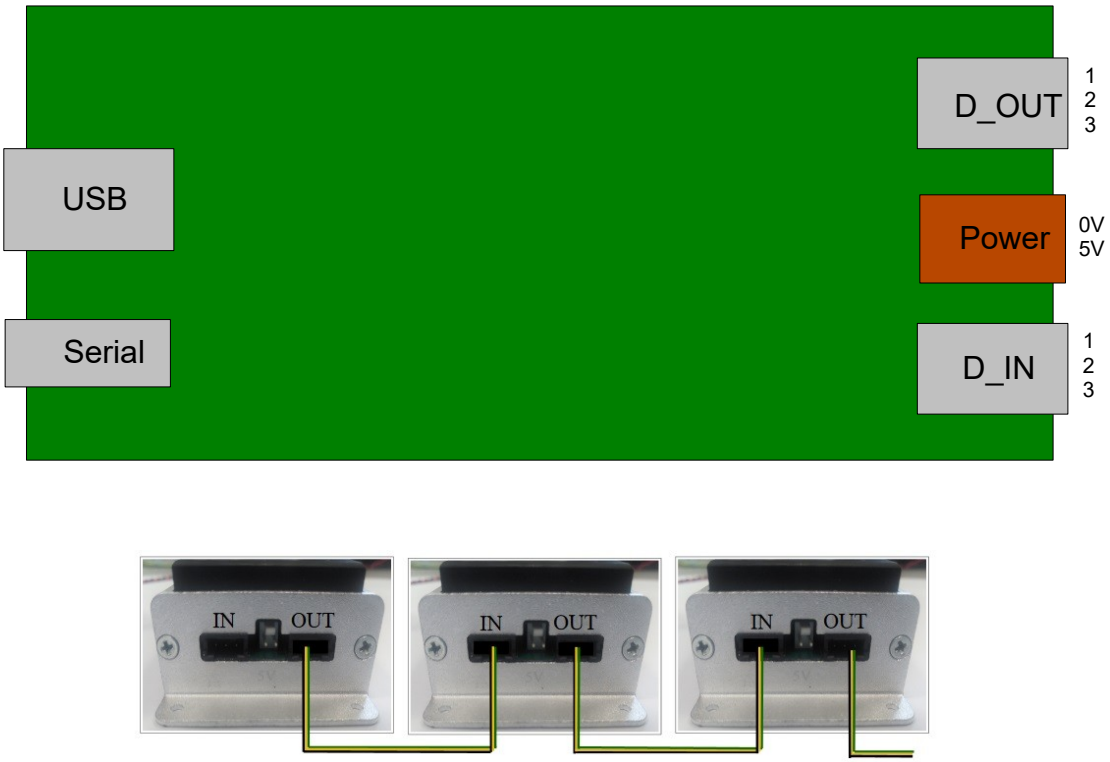

Figure 3.6

The Daisy Chain Function allows the end user to connect more than 1 analyser to a single USB port. Use the Daisy Chain Cables provided to connect each analyser to the next. The first unit in the chain is connected to the USB or Serial port. The D_Out Connector on the 1st unit is connected to the D_IN on the 2nd unit and so on for each analyser in the chain. If the first unit is connected to the usb port then its power is got from the USB of the PC. If however you are connecting the 1st unit through the Serial port then you will need to supply 5V separately. Each subsequent analyser in the chain will require a 5V source connected to the Power Connector also. Connectors are shown on the right-hand side of figure 3.6. The Power Connector JP5 is used to supply +5V DC to each Analyser in the chain. Allow 250mA @ 5V for each Analyser and ensure the wiring is adequate to supply the current without incurring large voltage drops. **For reliable operation it is necessary to have 5V at the Power Connector of each Analyser**.

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Daisy Chain Pin-out:

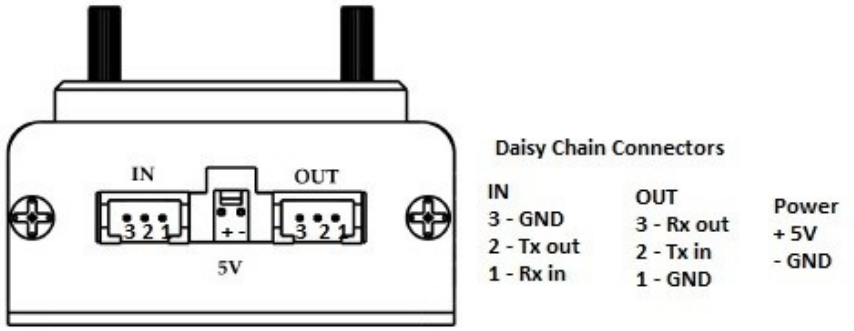

Figure 3.7

IN	D_IN	D_OUT
1	RX_in	RX_out
2	TX_out	TX_in
3	GND	GND

Figure 3.8

Figure 3.7 shows the layout of the Connectors viewed from the edge of the board. The *GND* line of *D_OUT* is connected with the *GND* line of *D_IN*, the *RX_out* of *D_OUT* is connected to *RX_in* of *D_IN* and the line *TX_in* of *D_OUT* is connected to the line *TX_out* of *D_IN*.

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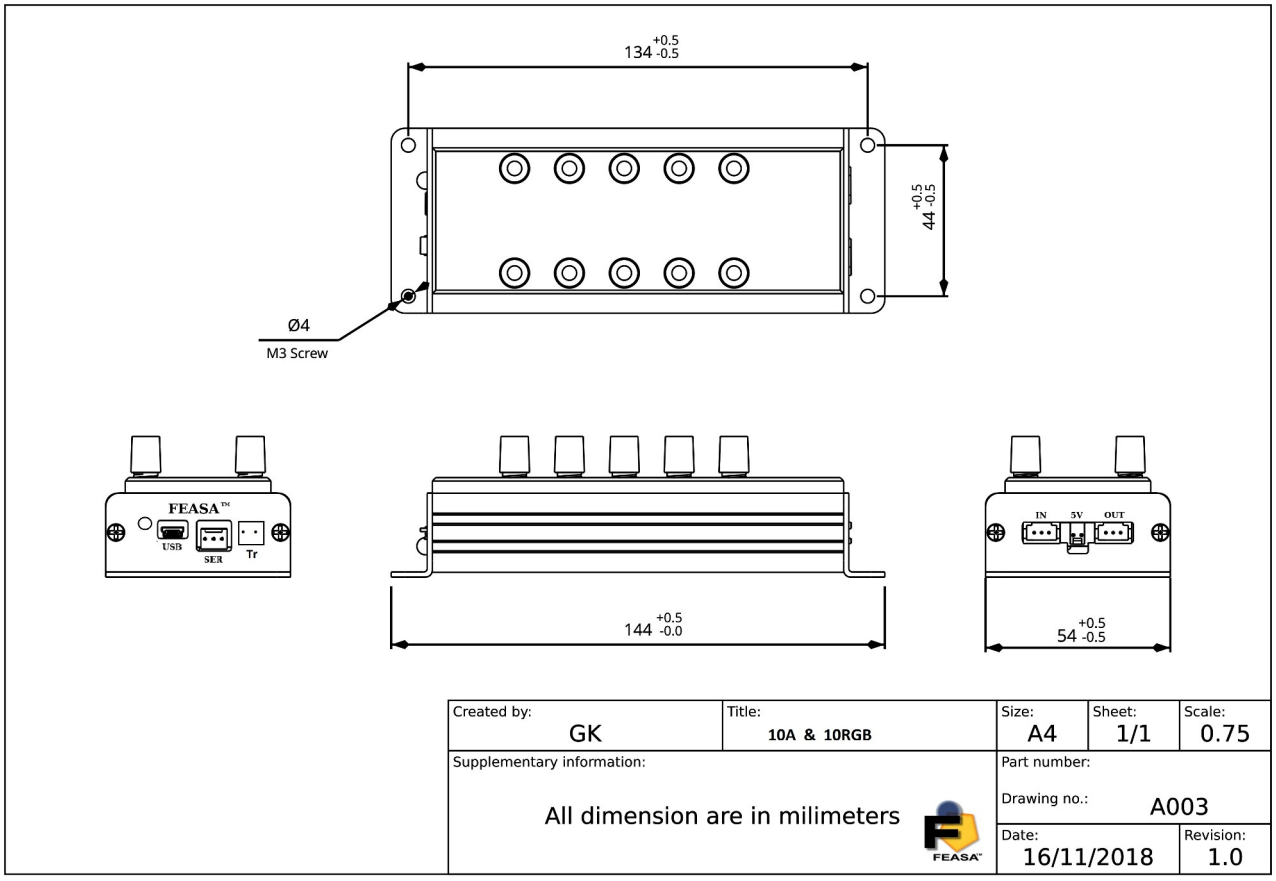
4.0 Low Light Analyser Range Physical Dimensions & Wiring Details

Description 10A:

Figure 4.0 below is a 10A Low Light Led Analyser. They all have mini usb, Serial Interfaces and Trigger Inputs at the front and a Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 2.2mm Plastic Optical Fiber (POF) with a 1.5mm core. The standard POF is 60cm in length.

These Low Light Analysers come housed in a Blue aluminum case with mounting brackets. The overall dimensions of the units are shown in Figure 4.0. Allow 60mm of height clearance to route the Fibers from the Analyser.

Physical Layout:



The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

Figure 4.0

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Front / Rear connections 10A

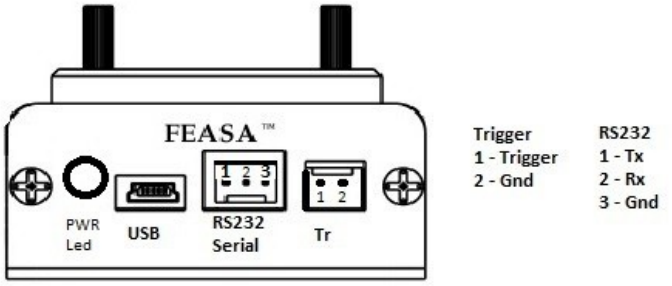

Figure 4.1 (Front Panel 10A)

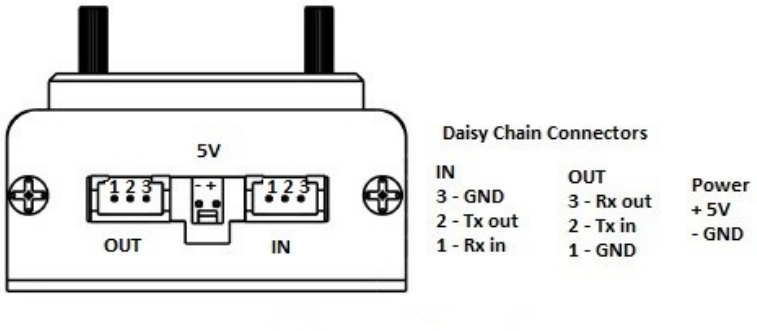

Figure 4.2 (Rear Panel 10A)

Power Requirements:

The Power requirements for the Analyser are 5V DC @ 100mA. Do **NOT Exceed 6V** as this will damage the Analyser. If the USB Interface is used then the Analyser will draw its power from the USB Port on the Computer. If the Serial Interface is used then the Analyser must be supplied power through the 2-pin Power connector. When power is applied to the Analyser a Green LED will light to indicate it is ready for testing.

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Description:

Figure 4.3 is a 3A - 6A Low Light Led Analyser. They all have mini usb, Serial Interfaces and Trigger Inputs at the front and they have Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 2.2mm Plastic Optical Fiber (POF) with a 1.5mm core. The standard POF is 60cm in length.

These Low Light Analysers come housed in a Blue aluminum case with mounting brackets. The overall dimensions of the units are shown in Figure 4.3. Allow 60mm of height clearance to route the Fibers from the Analyser.

Physical Layout:

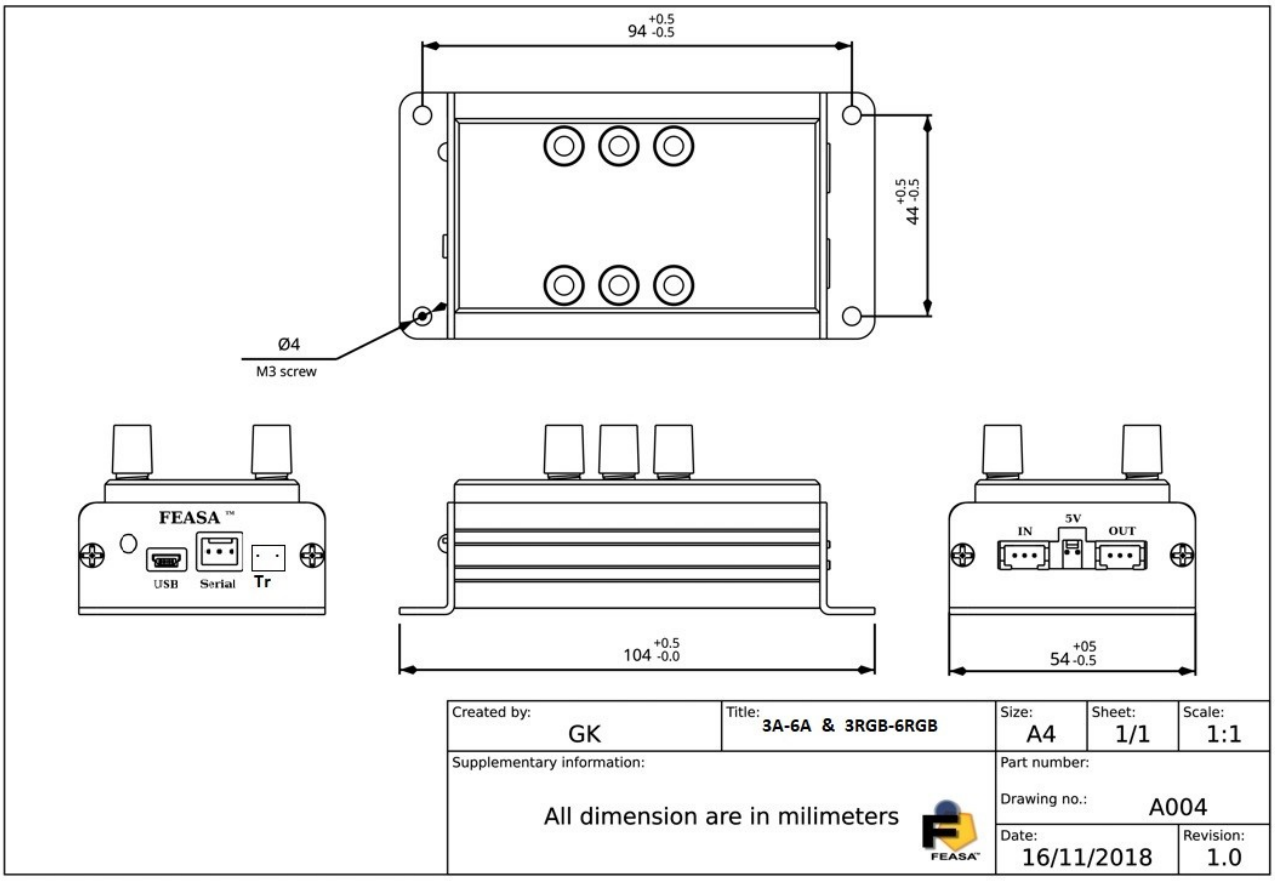

Figure 4.3

The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

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Front / Rear connections 3A-6A

This shows the layout of the Connectors viewed from the edge of the board.

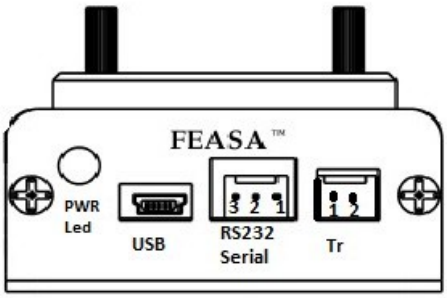

Figure 4.4 (Front Panel 3A - 6A).

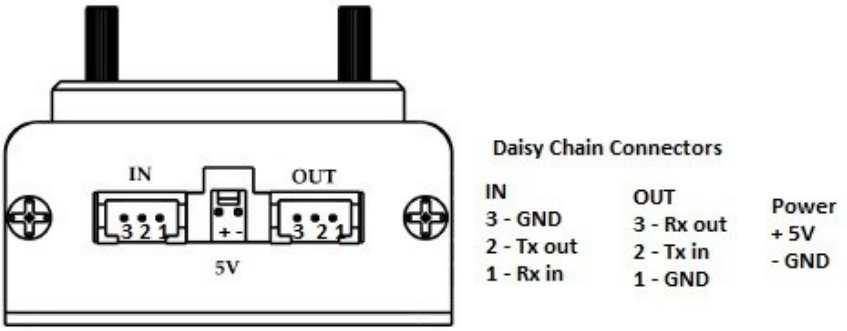

Figure 4.5 (Rear Panel 3A-6A).

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Serial Interface Wiring:

Serial Connector (RS232C)

Pin	*Signal*	*Pin on 9-Pin D-type*
1	Tx from LED Analyser	2
2	Rx from LED Analyser	3
3	GND	5

Figure 4.6

Power Connector JP5

Pin No	*Signal*
1	Power (5V DC)
2	GND

Figure 4.7

Power is applied to pins 1 and 2.

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Trigger Port Control:

The Feasa Led Analyser includes a Trigger function that allows an external signal to trigger a capture. The Trigger function must first be enabled by sending commands to the Led Analyser. The capture is triggered by a high-to-low transition on the Trigger Pin.

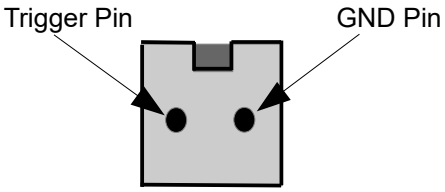

Figure 4.8

The layout of the Trigger Connector is shown above in figure 4.8. The trigger is activated on the Trigger Pin. This pin has an internal pull-up resistor to 3.3V. The Trigger is activated by driving this pin to GND.

Trigger Connector

Pin	***Signal***
1	Trigger Pin
2	GND

Figure 4.9

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Daisy Chain Ports:

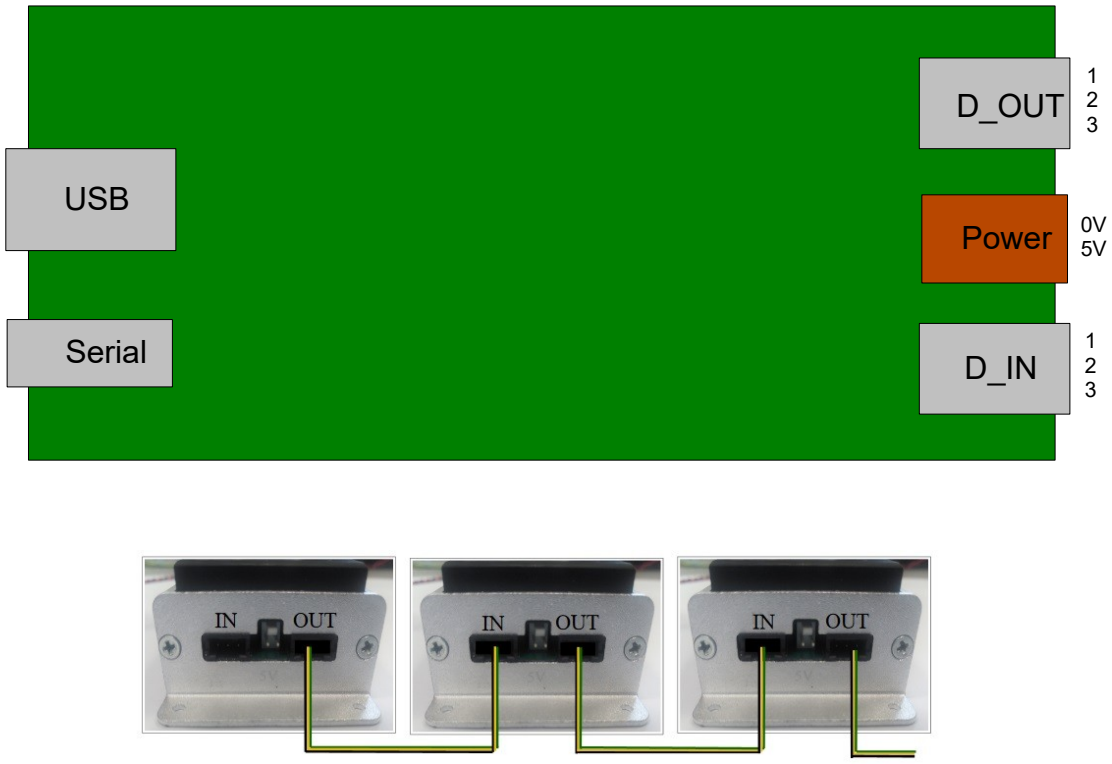

Figure 4.10

The Daisy Chain Function allows the end user to connect more than 1 analyser to a single USB port. Use the Daisy Chain Cables provided to connect each analyser to the next. The first unit in the chain is connected to the USB or Serial port. The D_Out Connector on the 1st unit is connected to the D_IN on the 2nd unit and so on for each analyser in the chain. If the first unit is connected to the usb port then its power is got from the USB of the PC. If however you are connecting the 1st unit through the Serial port then you will need to supply 5V separately. Each subsequent analyser in the chain will require a 5V source connected to the Power Connector also. Connectors are shown on the right-hand side of figure 4.10. The Power Connector JP5 is used to supply +5V DC to each Analyser in the chain. Allow 100mA @ 5V for each Analyser and ensure the wiring is adequate to supply the current without incurring large voltage drops. **For reliable operation it is necessary to have 5V at the Power Connector of each Analyser**.

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Daisy Chain Pin-out:

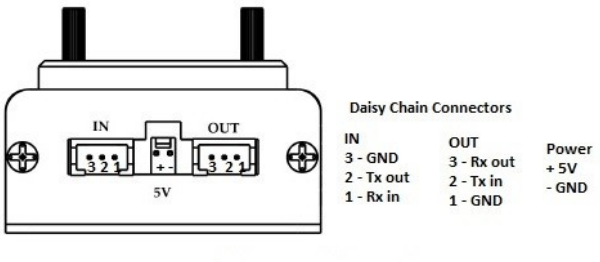

Figure 4.11 (3A-6A & 3RGB-6RGB)

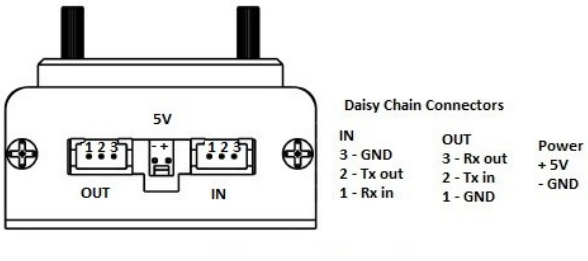

Figure 4.12 (10A & 10RGB).

IN	D_IN	D_OUT
1	RX_in	RX_out
2	TX_out	TX_in
3	GND	GND

Figure 4.13

Figure 4.11 & 4.12 shows the layout of the Connectors viewed from the edge of the board. The *GND* line of *D_OUT* is connected with the *GND* line of *D_IN*, the *RX_out* of *D_OUT* is connected to *RX_in* of *D_IN* and the line *TX_in* of *D_OUT* is connected to the line *TX_out* of *D_IN*.

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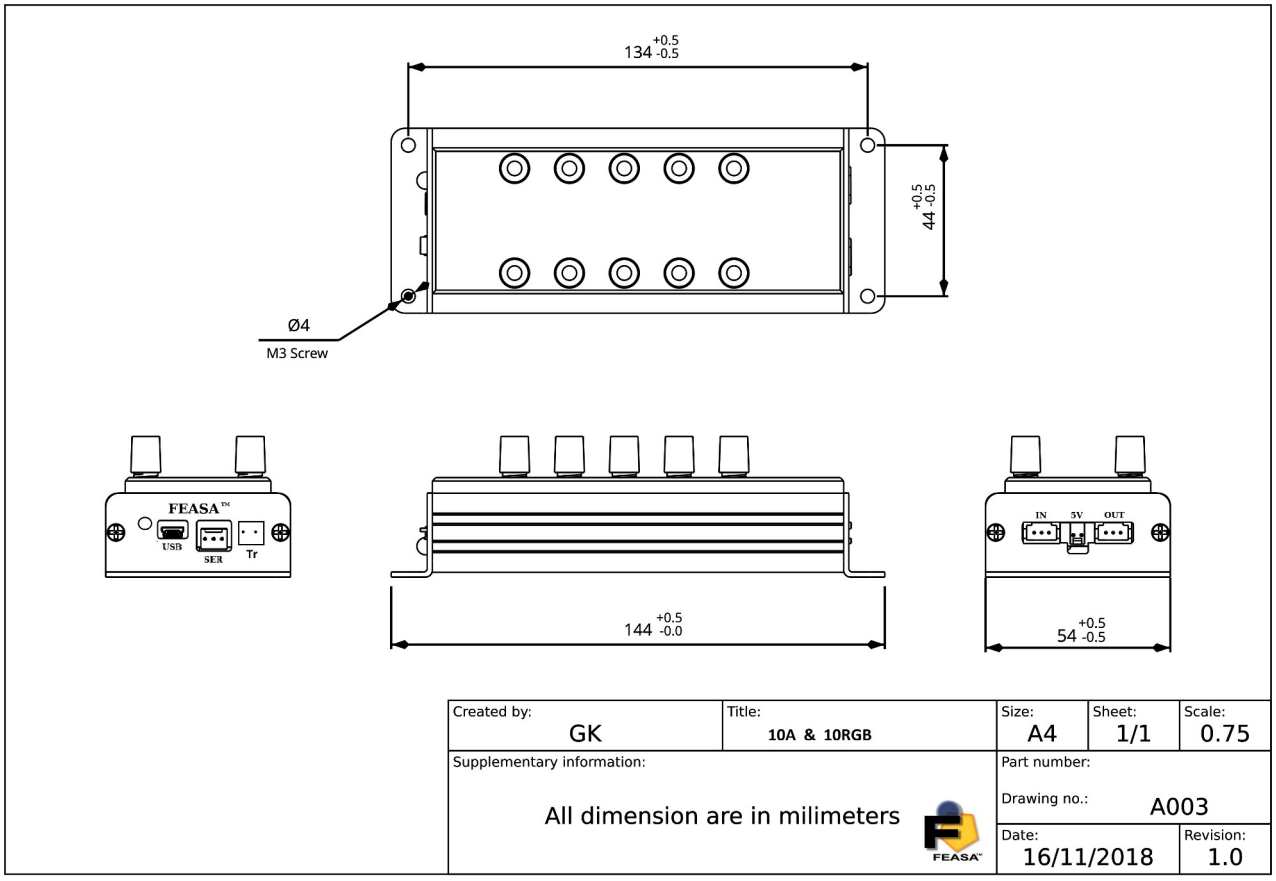
5.0 RGB Analyser Range Physical Dimensions & Wiring Details

Description 10RGB:

Figure 5.0 below is a 10RGB Led Analyser. They all have mini usb, Serial Interfaces and Trigger Inputs at the front and a Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 2.2mm Plastic Optical Fiber (POF) with a 1.5mm core. The standard POF is 60cm in length.

These RGB Analysers come housed in a Gold aluminum case with mounting brackets. The overall dimensions of the units are shown in Figure 5.0. Allow 60mm of height clearance to route the Fibers from the Analyser.

Physical Layout:



The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

Figure 5.0

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Front / Rear connections 10RGB

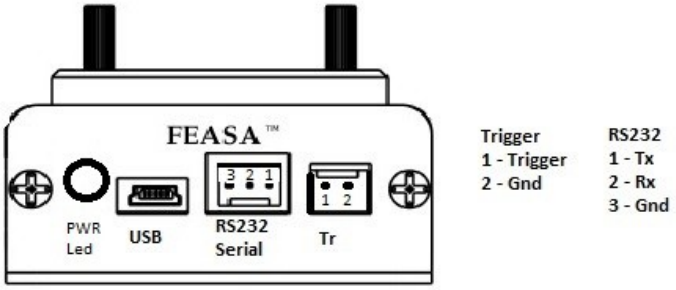

Figure 5.1 (Front Panel 10RGB)

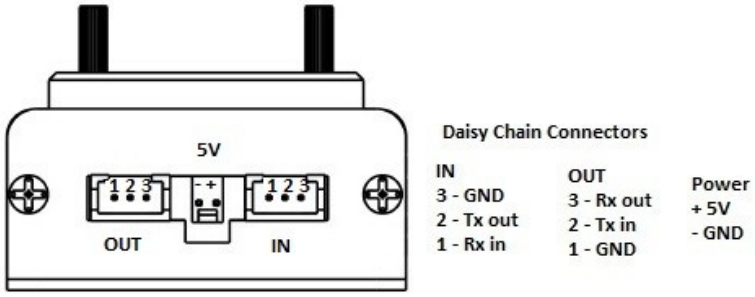

Figure 5.2 (Rear Panel 10RGB)

Power Requirements:

The Power requirements for the Analyser are 5V DC @ 100mA. Do **NOT Exceed 6V** as this will damage the Analyser. If the USB Interface is used then the Analyser will draw its power from the USB Port on the Computer. If the Serial Interface is used then the Analyser must be supplied power through the 2-pin Power connector. When power is applied to the Analyser a Green LED will light to indicate it is ready for testing.

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Description 3RGB - 6RGB:

Figure 5.3 is a 3RGB - 6RGB Led Analyser. They all have mini usb, Serial Interfaces and Trigger Inputs at the front and they have Daisy Chain and Serial Power connections at the rear. The analysers measure the parameters of the Led by transferring the light from the Led under test to the analyser via a 2.2mm Plastic Optical Fiber (POF) with a 1.5mm core. The standard POF is 60cm in length.
These RGB Analysers come housed in a Gold aluminum case with mounting brackets. The overall dimensions of the units are shown in Figure 5.3. Allow 60mm of height clearance to route the Fibers from the Analyser.

Physical Layout:

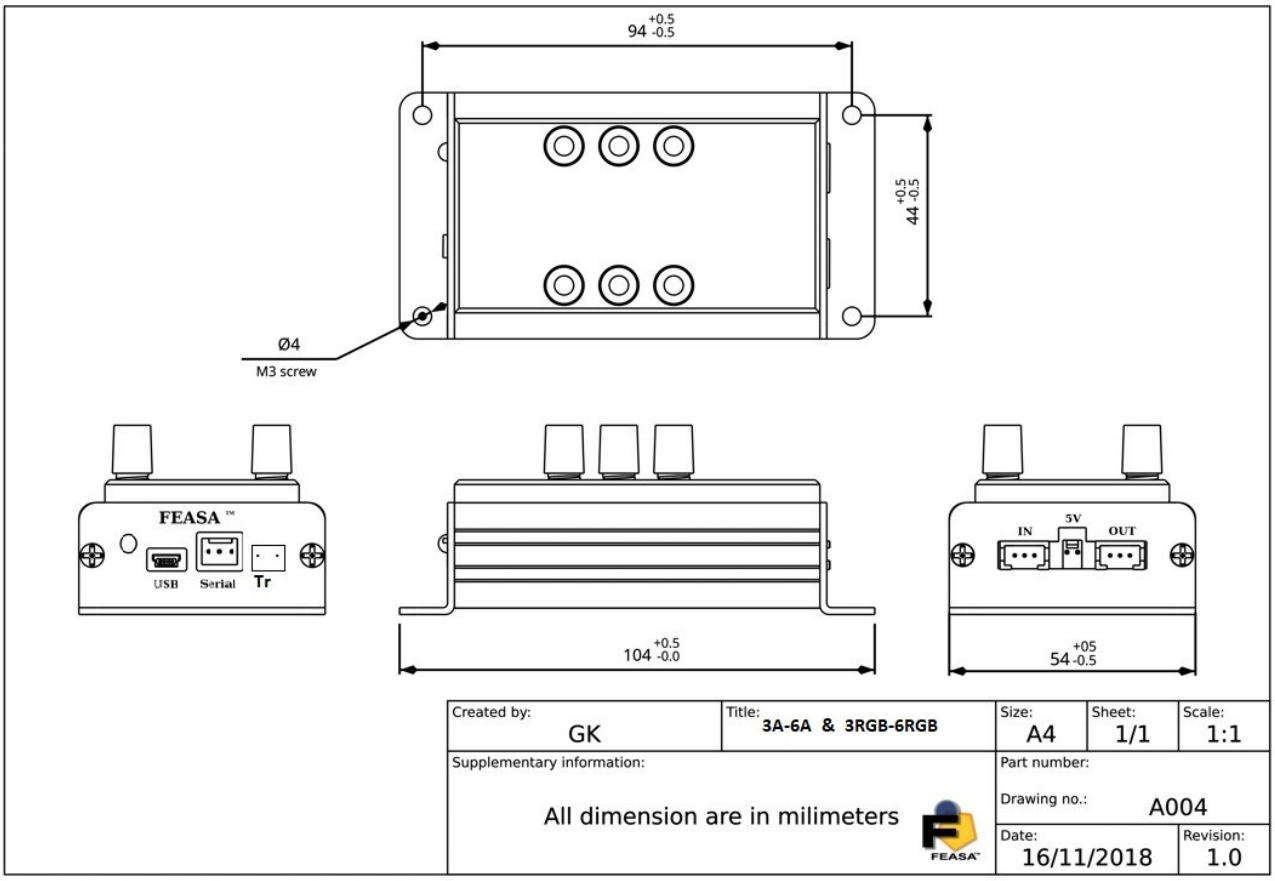

Figure 5.3

The Mounting holes are drilled at **4mm** and we recommend to use **M3** screws for mounting.

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Front / Rear connections 3RGB - 6RGB

This shows the layout of the Connectors viewed from the edge of the board.

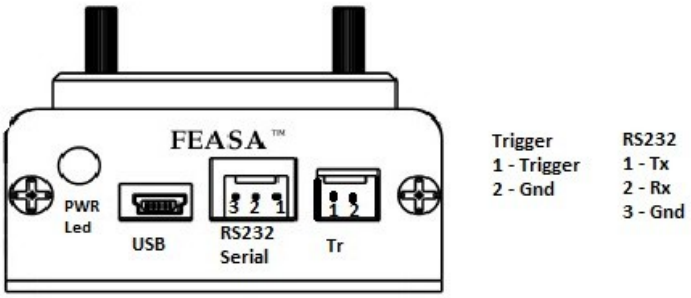

Figure 5.4 (Front Panel 3RGB - 6RGB).

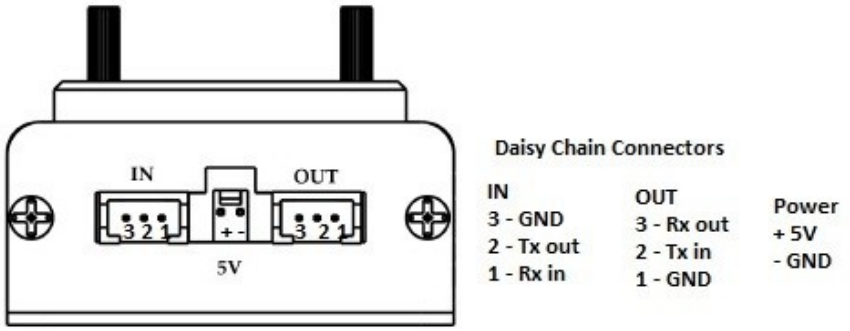

Figure 5.5 (Rear Panel 3RGB - 6RGB).

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Serial Interface Wiring:

Serial Connector (RS232C)

Pin	*Signal*	*Pin on 9-Pin D-type*
1	Tx from LED Analyser	2
2	Rx from LED Analyser	3
3	GND	5

Figure 5.6

Power Connector JP5

Pin No	*Signal*
1	Power (5V DC)
2	GND

Figure 5.7

Power is applied to pins 1 and 2.

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Trigger Port Control:

The Feasa Led Analyser includes a Trigger function that allows an external signal to trigger a capture. The Trigger function must first be enabled by sending commands to the Led Analyser. The capture is triggered by a high-to-low transition on the Trigger Pin.

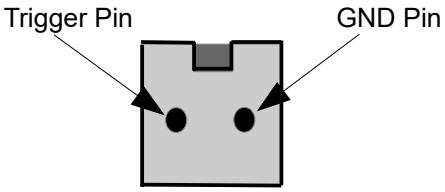

Figure 5.8

The layout of the Trigger Connector is shown above in figure 5.8. The trigger is activated on the Trigger Pin. This pin has an internal pull-up resistor to 3.3V. The Trigger is activated by driving this pin to GND.

Trigger Connector

Pin	***Signal***
1	Trigger Pin
2	GND

Figure 5.9

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Daisy Chain Ports:

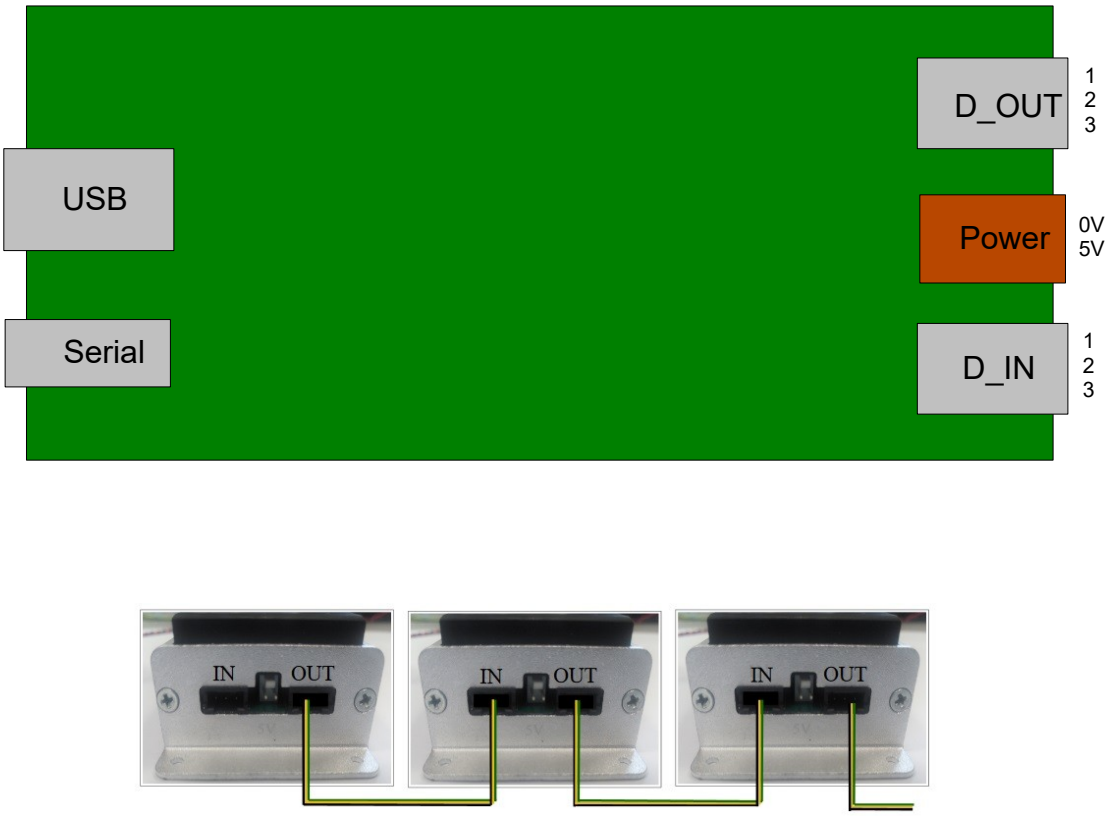

Figure 5.10

The Daisy Chain Function allows the end user to connect more than 1 analyser to a single USB port. Use the Daisy Chain Cables provided to connect each analyser to the next. The first unit in the chain is connected to the USB or Serial port. The D_Out Connector on the 1st unit is connected to the D_IN on the 2nd unit and so on for each analyser in the chain. If the first unit is connected to the usb port then its power is got from the USB of the PC. If however you are connecting the 1st unit through the Serial port then you will need to supply 5V separately. Each subsequent analyser in the chain will require a 5V source connected to the Power Connector also. Connectors are shown on the right-hand side of figure 5.10. The Power Connector JP5 is used to supply +5V DC to each Analyser in the chain. Allow 200mA @ 5V for each Analyser and ensure the wiring is adequate to supply the current without incurring large voltage drops. **For reliable operation it is necessary to have 5V at the Power Connector of each Analyser**.

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Daisy Chain Pin-out:

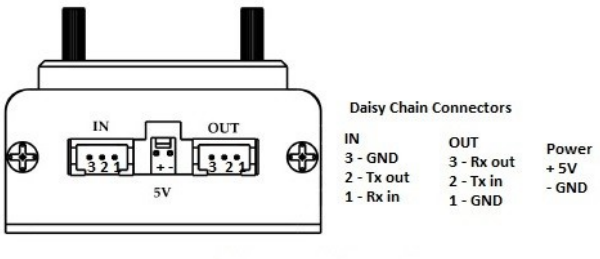

Figure 5.11(3A-6A & 3RGB-6RGB)

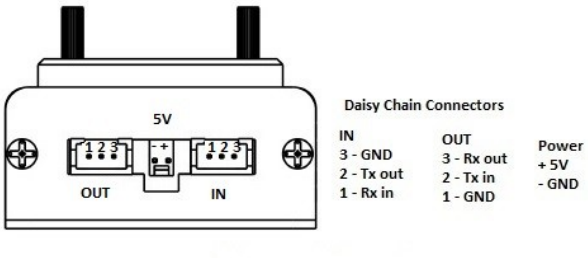

Figure 5.12 (10A & 10RGB).

IN	D_IN	D_OUT
1	RX_in	RX_out
2	TX_out	TX_in
3	GND	GND

Figure 5.13

Figure 5.11 & 5.12 shows the layout of the Connectors viewed from the edge of the board. The *GND* line of *D_OUT* is connected with the *GND* line of *D_IN*, the *RX_out* of *D_OUT* is connected to *RX_in* of *D_IN* and the line *TX_in* of *D_OUT* is connected to the line *TX_out* of *D_IN*.

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6.0 Plastic Optical Fiber Dimensions & Installing:

Description 1mm POF:

Having successfully mounted the Led Analyser unit in your fixture using the mechanical mounting details and wiring instructions provided the next step is probably the most critical to achieving good repeatable readings from your analyser.

Each analyser is provided with a corresponding number of Plastic Optical Fibers i.e. Feasa 20-I will have 20 Fibers where a Feasa 3-I will have 3 fibers etc. The Plastic Optical fiber used on the ICT and Functional Led Analyser Range is 1mm outside diameter with a single 0.5mm core.
The Plastic Optical Fiber used in Low Light and RGB Analysers is 2.2mm with a single 1.5mm core.

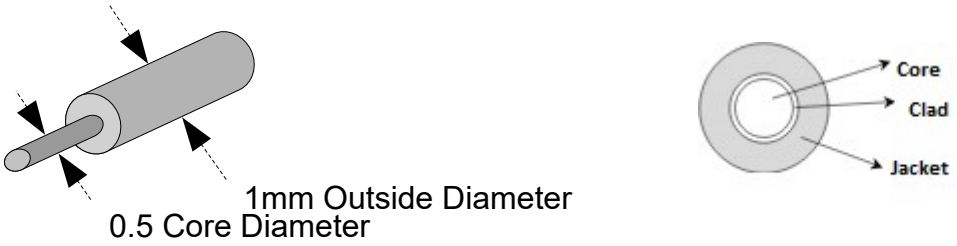

Figure 6.0

Some important characteristics of the fiber are as follows:-

- Outer Diameter 1mm, Core Diameter 0.5mm
- Minimum bend radius for 1mm Fiber is 10mm
- Operating temperature range of 1mm fiber -55° to +70°
- Fibers shipped from the factory are 600mm – 615mm in length.
- Fibers can be cut using the supplied Fiber Cutter
- ROHS certification, The product does not contain RoHS 2 hazardous substances, Cadmium, Lead, Mercury, Chromium (VI), PBB, PBDE, DIBP, DEHP, DBP and BBP intentionally

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Description 2.2mm POF:

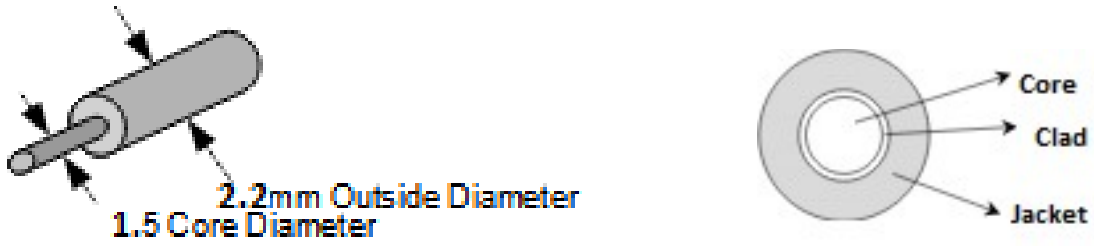

Figure 6.1

Some important characteristics of the fiber are as follows:-

- Outer Diameter 2.2mm, Core Diameter 1.5mm
- Minimum bend radius for 2.2mm Fiber is 35mm
- Operating temperature range of 1mm fiber -55° to +70°
- Fibers shipped from the factory are 600 – 615 mm in length.
- IF Fibers are cut the ends must be repolished prior to use
- ROHS certification, The product does not contain RoHS 2 hazardous substances, Cadmium, Lead, Mercury, Chromium (VI), PBB, PBDE, DIBP, DEHP, DBP and BBP intentionally

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Working the 1mm Fiber:

The LED Analyser is supplied with pre-finished fiber ends so ***do not cut*** the fiber unless it is necessary. If there are unused fibers coil them up in the Fixture. They could be useful later if a fiber is broken. Sometimes, due to space constraints or the fiber end has been damaged, it will be necessary to cut the fiber. The procedure for cutting the fiber using the Feasa supplied Fiber Cutter is as follows:-
- Select the correct hole size for the fiber being cut.
- Pull up the razor blade, Push fiber into the selected aperture until the damaged region is approximately 2 mm beyond the razor blade. (figure 6.2)

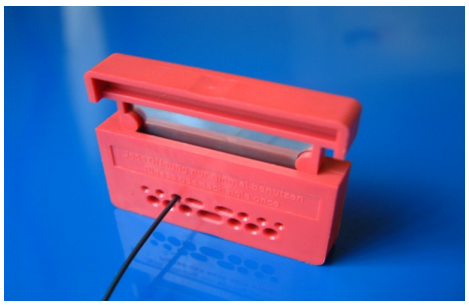

Figure 6.2

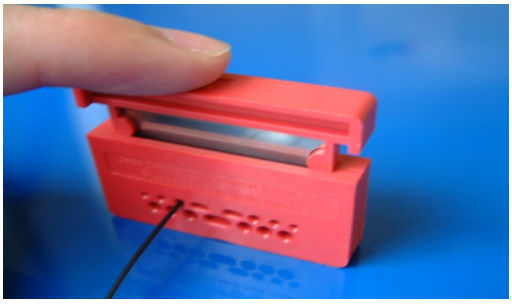

Figure 6.3

- Press down on the top of the razor blade until the fiber is cut through. (figure 6.3)
Check the fiber for a 90degree cleave and a clean end.
Is is recommended that the (Red) Fiber Cutter supplied with the Led Analyser is only used to cut the Fibers for ONE Led Analyser.

Replace a Fiber

If it is necessary to replace a Fiber in the Led Analyser system, they can be ordered from the factory in 0.6m lengths. To replace a fiber simply unscrew the fiber holder cap on the Led Analyser Channel in question and slide the Fiber out. Unpack the new fiber and with the screw open slide the new fiber into the opening on the top of the holder in a twisting motion. Inset approx 25mm until you cannot insert any further and re-tighten the screw.

Feasa recommends the fiber should be replaced if the Fiber looks damaged or if the Intensity readings significantly drop. This should be carried out during the monthly factory PM's on test equipment.

Working with the 2.2mm Fiber:

The Low Light and RGB Led Analysers are supplied with pre-finished (polished) fiber ends so **do not cut** the fiber. If there are unused fibers coil them up in the Fixture. They could be useful later if a fiber is broken. Sometimes, due to space constraints or the fiber end has been damaged, it will be necessary to replace the fiber. You can purchase Fiber from Feasa cut to a pre determined length and polished.
We do not recommend you cut the 2.2mm fiber with the red clipper as the finish is not good enough to get a high enough intensity and repetitive readings.

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Fix a Glass Fiber from Led Analyser to the Optical Head without Fiber holder

1.0 Follow the instructions on the packet for mixing and dispensing an Epoxy.

1.1 Strip the outer insulation from approx 25mm of the fiber

1.2 Ensure the end of the Fiber is clean of any debris.

1.3 Push the fiber through the opening on the top of the Optical Head until it is in as far as possible. Then retract approx 2-3mm

1.4 Dab a drop of the Epoxy onto the Fiber at the opening of the OH.

1.5 Push the Fiber back in the 2mm and apply another dab all around the optical head fiber junction.

1.6 Twist the Optical Head to ensure an even coating of the epoxy is all around the joint.

1.7 Allow the Epoxy to cure as per the instructions on the pack.

1.8 Repeat for all Fibers and Optical Heads.

Fix a Plastic Optical Fiber from Led Analyser to the Optical Head without Fiber holder

1.0 Follow the instructions on the packet for mixing and dispensing an Epoxy.

1.1 Ensure the end of the Fiber is clean of any debris.

1.2 Push the fiber through the opening on the top of the Optical Head until it is in as far as possible. Then retract approx 2-3mm

1.3 Dab a drop of the Epoxy onto the Fiber at the opening of the OH.

1.4 Push the Fiber back in the 2mm and apply another dab all around the optical head fiber junction.

1.5 Twist the Optical Head to ensure an even coating of the epoxy is all around the joint.

1.6 Allow the Epoxy to cure as per the instructions on the pack.

1.7 Repeat for all Fibers and Optical Heads.

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Fix a 2.2mm POF from the Low Light / RGB Analyser to the Optical Head Series without holders

1.0 Follow the instructions on the packet for mixing and dispensing the Epoxy.

1.1 Ensure the end of the fiber is clean. Do not cut the fiber length as supplied by Feasa as doing can effect the accuracy of the Analyser. Should you need to cut the fiber please run the Feasa supplied balancing or usercal software to compensate.

1.2 Push the fiber through the opening on the top of the Optical Head until it is in as far as possible. Then retract approx 2-3mm

1.3 Dab a drop of the Epoxy onto the Fiber at the opening of the OH.

1.4 Push the Fiber back in the 2mm and apply another dab all around the optical head fiber junction.

1.5 Twist the Optical Head to ensure an even coating of the epoxy is all around the joint.

1.6 Allow to bond for 10 – 15min

1.7 Repeat for all Fibers and Optical Heads.

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7.0 Install Fiber Guide LA-REC-xx:

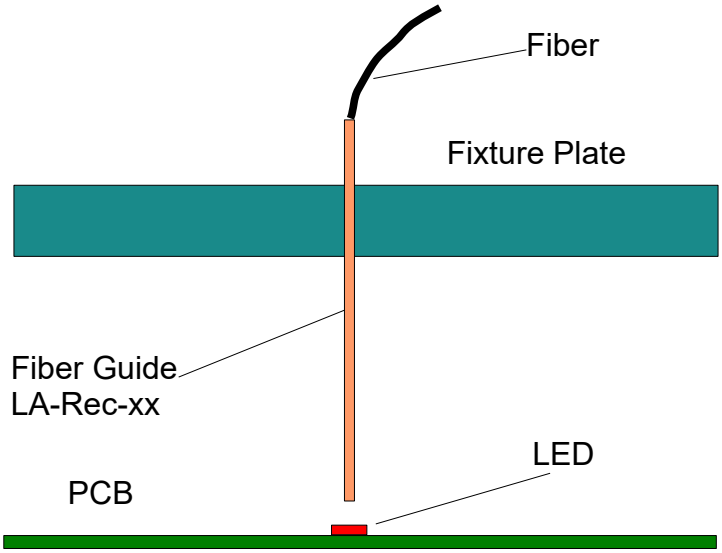

Figure 7.0

1. Mount the Led Analyser into the Fixture using the dimension and wiring details provided in this document.

2. Locate the Led to be tested.

3. The Fiber Guide must be mounted over the LED to be tested. It must be located over the **Optical** centre of the LED (This is the spot where the light originates). This is not always the mechanical centre of the LED – it is often offset from the centre. The optical centre of the LED can be found in the mechanical drawing of the LED (usually found towards the end of the data sheet).

4. At this time you will need to decide how you want to locate your Plastic Optical Fiber over the Led to be tested. Feasa provide Fiber Guides **LA-REC-xx** with each unit. Proceed to step 5 now if you are using these Fiber Guides.
   Component placement accuracy can have an effect on intensity accuracy so Feasa provide a range of **Optical Heads** which improve the stability of intensity readings. Should you decide to use the optical head please refer to the section of this manual for mounting an Optical Head.

5. Drill a hole over the xy location. The Diameter of hole depends on the hardness of the material you are drilling into perspex or G10 Fiberglass. A table of dimensions is available at Optical Head Section below. We would recommend to drill a sample hole prior to fixture drilling..

6. Insert one of the LA-Rec-xx Fiber Guides provided setting the height over the led as necessary. Set a gap of 3mm between the top of the LED and the bottom of the Guide initially. Do not fix the Fiber Guide permanently at this stage. It may be necessary to adjust the gap later during the debug phase.

7. Place the corresponding number fiber from the Led Analyser into this Guide and push through until it is flush with the end of the Fiber Guide. Do not cut the fiber at this time.

8. Repeat the process for each Led to be tested.

9. Coil away any unused fibers as they may be required at a later date for repairs etc.

10. Debug your program.

11. During debug you may be required to move the Fiber Guide closer or further away due to intensity readings. Please do so at this time without cutting the fiber.

12. When you are satisfied that all your Leds are testing OK you can then tidy up the fiber lengths. Remember the bend radius of the fiber is 15mm anything tighter will result in degrading of your results. Avoid using over tight tie wraps as they too will decrease your readings and possibly damage you fibers. If at this time you wish to shorten you fibers please follow the procedure for cutting the fibers above. This will also change your intensity readings so a minor debug of your program will be required.

13. The Fiber may be fixed permanently, **after debug has been completed**, with a glue or Epoxy.

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LA-REC-xx Sizes:

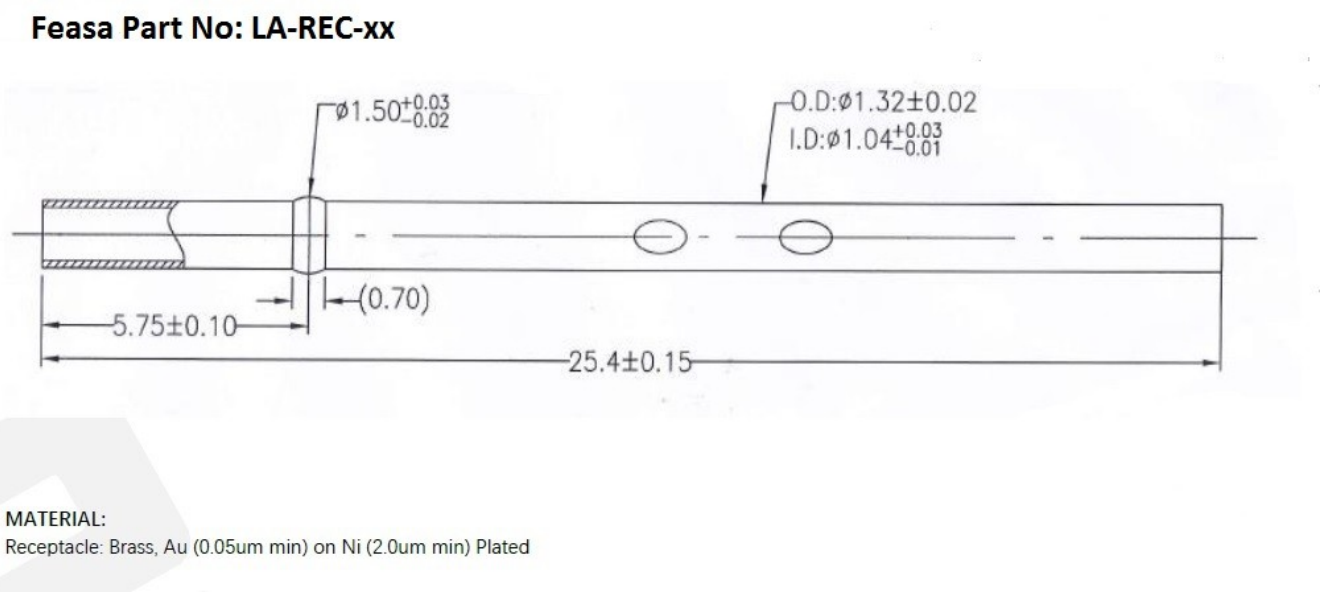
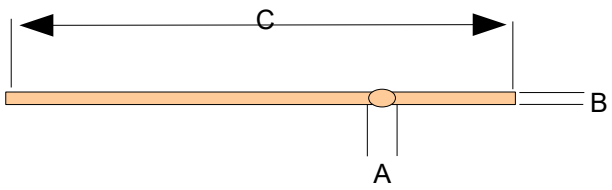


Figure 7.1



Part Number	Diameter A, Diameter B	Recommended Drill Size	Length
LA-Rec-xx	OD B=1.32mm ID B=1.05mm	1.35mm for perspex 1.40mm for G10 Fiberglass	C =25.4mm

Figure 7.2

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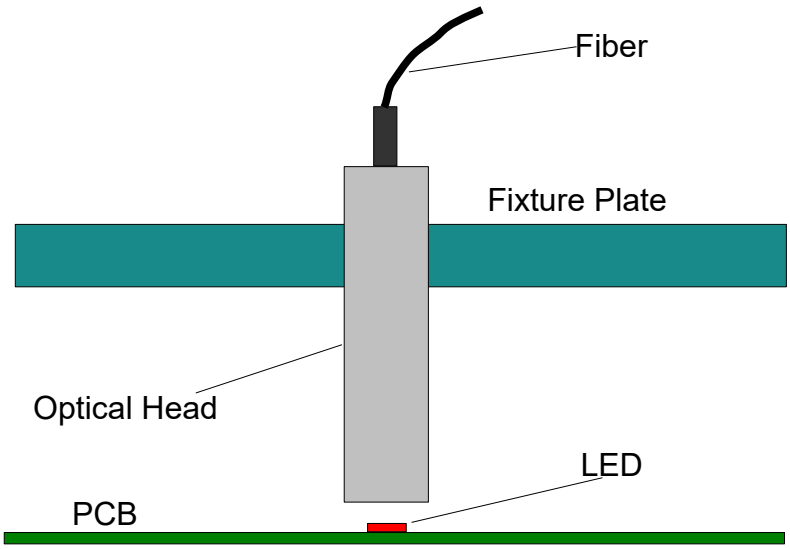
8.0 Optical Heads:

Install the Optical Head OH-x:

The Feasa Range of Optical Heads help to compensate for the variation in placement of LED's from board to board. This has a big effect when testing the LED Intensity. So if the Optical Head is not positioned correctly it could compromise the Intensity testing later.



Optical Head Positioned over PCB with LED

Figure 8.0

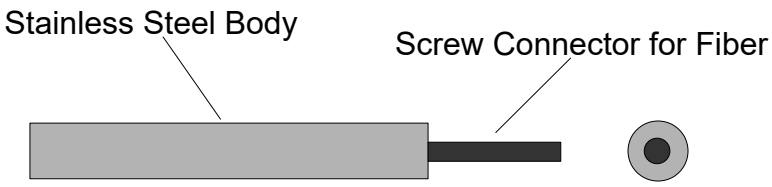


Figure 8.1

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1. Mount the Led Analyser into the Fixture using the dimension and wiring details provided in this document.
2. Locate the Led to be tested.
3. The Optical Head must be mounted over the LED to be tested. It must be located over the **Optical** centre of the LED (This is the spot where the light originates). This is not always the mechanical centre of the LED – it is often offset from the centre. The optical centre of the LED can be found in the mechanical drawing of the LED (usually found towards the end of the data sheet).
4. Drill a mounting hole over this xy location. The Diameter of hole depends on the hardness of the material you are drilling into and the type of Optical Head you are using. Please refer to the Optical Head Data sheet for details.
5. *Intensity is a measure of the amount of light being emitted by the LED. The Analyser tests the Intensity of each LED and outputs this value to the Test System. The value is output as a number in the range* ***0 - 99,999****. The Analyser is calibrated to a fixed standard and all measurements are relative. The Intensity output reading is NOT part of the International System of Units and is not an absolute or traceable unit of colour measurement. It is part of the Feasa intensity system of describing colour brightness.*
6. Place the corresponding number fiber from the Led Analyser into the Optical Head. Loosen the Black Screw on the end of the Optical Head and push the Fiber down gently until the stop is reached. Tighten the screw by hand to secure the fiber in place. Do not over tighten the screw. Do not cut the fiber at this time.
7. Typically we recommend to push the fiber fully into the Optical Head, this allows for easy maintenance and repair in production. *However during debug you may require higher or lower Intensity readings due to the brightness of the Led under test. Thus it may be required to pull the Fiber out to reduce intensity readings required. The further you pull the fiber back the lower the intensity reading.*
8. Repeat the process for each Led to be tested.
9. Coil away any unused fibers as they may be required at a later date for repairs etc.
10. Debug your program.
11. Typically we recommend a space of between 3-5mm from the OH to the LED however during debug you may be required to move the Optical Head closer or further away due to intensity readings. (Please refer to No 7 above for further changes). Please do so at this time without cutting the fiber.
12. When you are satisfied that all your Leds are testing OK you can then tidy up the fiber lengths (optional). Check the bend radius of the fiber since anything tighter will result in degrading of your results. Avoid using over tight tie wraps as they too will decrease your readings and possibly damage you fibers. If at this time you wish to shorten you fibers please follow the procedure for cutting the fibers above. This will also change your intensity readings so a minor debug of your program will be required.
13. The Optical Head may be fixed permanently, **after debug has been completed**, with a glue or Epoxy. We have seen some customers develop OH holders to grip the Optical Heads in place.

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Optical Head Sizes:

The Feasa Optical Heads have been designed to ensure stability when testing the intensity of LEDs. The robust and compact design delivers consistent and repeatable readings with a <10% intensity change over a 1mm placement of the LED. The Optical Head addresses the following issues:

- **Compensation for LED Placement**
- **Repeatable Intensity Readings**
- **Reduced sensitivity to ambient light**

These Optical Heads (OH) have a Diameter of 2.54mm and are suitable for Led centre to centre distance of 2.8mm: They are used with 1mm Plastic Optical Fiber (POF) which needs to be glued in place. The Temperature range is 0C – 70C

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-21	0.100 +/- .001	2.54 +/- 0.025 mm	2.5mm	1.000 +/- .005 in	2.8mm	POF 1mm	Standard Intensity Leds

These Optical Heads (OH) have a Diameter of 3mm and are suitable for Led centre to centre distance of 3.5mm: They are used with 1mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-1	0.120 +/- .001	3.022 – 3.048 mm	3.02mm	40mm	3.5mm	POF 1mm	Standard Intensity Leds
OH-1A	0.120 +/- .001	3.022 – 3.048 mm	3.02mm	40mm	3.5mm	POF 1mm	High Intensity Leds
OH-24	0.120 +/- .001	3.022 – 3.048 mm	3.02mm	40mm	3.5mm	POF 1mm	Standard Intensity. 90º

These Optical Heads (OH) have a Diameter of 3.55mm and are suitable for Led centre to centre distance of 4mm: They are used with 1mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-5	0.141 +/- .001	3.556 – 3.607 mm	3.55mm	49mm	4mm	POF 1mm	Standard Intensity Leds
OH-5S	0.141 +/- .001	3.556 – 3.607 mm	3.55mm	28mm	4mm	POF 1mm	Short (OH5)

These Optical Heads (OH) have a Diameter of 4.55mm and are suitable for Led centre to centre distance of 5mm: They are used with 1mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-3	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	50mm	5mm	POF 1mm	Standard Intensity Leds
OH-2	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	30mm	5mm	POF 1mm	Short (OH3)
OH3-RGB	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	50mm	5mm	POF 1mm	RGB Led Test
OH-4	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	59mm	5mm	POF 1mm	90º
OH-4S	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	39mm	5mm	POF 1mm	Short 90º
OH-23	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	51mm	5mm	POF 1mm	Super High Bright Intensity
OH-33	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	50mm	5mm	POF 1mm	High Bright Intensity

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FEASA LED ANALYSERS

These Optical Heads (OH) have a Diameter of 12mm and are suitable for Led centre to centre distance of 13mm: They are used with 1mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-30	0.472 +/- .001	11.80 – 12.02 mm	12mm	57mm	13mm	POF 1mm	Large Diameter Led

These Optical Heads (OH) are suitable for Leds in High Temperature Environments: They are used with 1.1mm Glass Optical Fiber. The Temperature range is -65C to +125C. They are Recommended to be used with the Led Life Tester Analyser.

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-7LT	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	40mm	5mm	Glass 1.1mm	Standard Intensity Leds
OH-17LT	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	40mm	5mm	Glass 1.1mm	RGB Led Test
OH-10G-xxx	0.037 +/- .0025	0.876 – 1.003 mm	1.00mm	52mm + Fiber xxx cm	1.5mm	Glass 1.1mm	High Bright Int.

These Optical Heads (OH) have a Diameter of 4.55mm and are suitable for Led centre to centre distance of 5mm: They are used with 1.1mm Glass Optical Fiber. The Temperature range is 0C – +70C. They are Recommended to be used with the Infra Red Led Analyser for Wavelength up to 950nm

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH8-IR	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	50mm	5mm	Glass / POF	Standard IR Leds
OH8A-IR	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	51.5mm	5mm	Glass / POF	High Bright IR Leds

These Optical Heads (OH) have a Diameter of 8.00mm and are suitable for Led centre to centre distance of 9mm: They are used with 1mm Plastic Optical Fiber (POF). The OH-6S has a diameter of 10.2mm and a centre to centre distance of 11mm. The Temperature range is 0C – 70C.

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-6	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	51mm	9mm	POF 1mm	High Bright Intensity Led
OH-6S	0.400 +/- .005	10.2 +/- 0.15 mm	10.2mm	34.5mm	11mm	POF 1mm	Short (OH-6) PVC
OH-6N	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	50mm	9mm	POF 1mm	Standard Intensity Led
OH6-RGB	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	50mm	9mm	POF 1mm	RGB Led Test
OH-26	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	52mm	9mm	POF 1mm	Super High Bright Int.

These Optical Heads (OH) have a Diameter of 6.55mm and are suitable for Led centre to centre distance of 7mm: They are used with 1mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C. They are recommended for use in an RF Environment.

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-9RF	0.257 +/- .002	6.25 – 6.55 mm	6.55mm	50mm	7mm	POF 1mm	RF Testing
OH-19RF	0.257 +/- .002	6.25 – 6.55 mm	6.55mm	35mm	7mm	POF 1mm	RF Testing 90º

This Optical Heads (OH) have been developed for specific Customer Requirements

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-7D	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	40mm + 2 Fibers 60cm	5mm	Optional	Dual fiber

FEASA LED ANALYSERS

These Optical Heads (OH) have a Diameter of 0.9mm - 1.00mm and are suitable for Leds centre to centre distance of 1.5mm: They are pre-fitted with 60cm long 1mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C for the OH-10 & OH-11. The Temperature range is -65C – +125C for the OH-10G-XX. They are recommended for testing High Bright Leds such as headlights and rear light of cars.

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-10	0.038 +/- .0025	0.914 – 1.016 mm	1.00mm	52mm + Fiber 60cm	1.5mm	POF 1mm	High Bright Int.
OH-10G-xxx	0.038 +/- .0025	0.914 – 1.016 mm	1.00mm	52mm + Fiber xxx cm	1.5mm	Glass 1.1mm	High Bright Int. With Glass Fiber
OH-11	0.0357 +/- .0003	0.899 – 0.914 mm	0.90mm	35mm + Fiber 60cm	1.1mm	POF 1mm	High Bright Int.

These Optical Heads are recommended for testing with the Low Light and RGB Analyser Range. They require 2.2mm Plastic Optical Fiber (POF) to be glued in place. The Temperature range is 0C – 70C.

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
OH-12	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	29mm	5mm	POF 2.2mm	Short (OH13)
OH-13	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	37mm	5mm	POF 2.2mm	Low Light Analyser
OH-14	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	45mm	5mm	POF 2.2mm	90º
OH-14S	0.180 +/- .002	4.521 – 4.623 mm	4.55mm	32mm	5mm	POF 2.2mm	Short (OH14)

They are designed to be used with the Feasa Low Light and RGB Analyser Range. These Optical Heads (OH) have a Diameter of 8.00mm and are suitable for Led centre to centre distance of 9mm: They use 2.2mm Plastic Optical Fiber (POF). The Temperature range is 0C – 70C.

Part No	Body Diameter - Imperial	Body Diameter - Metric	Drill Size in G10	Overall Length (inc. Screw holder if applicable)	Minimum Centre to Centre Distance	Fiber	Comments
~~**OH-16**~~	~~0.400 +/- .005~~	~~10.2+/- 0.15 mm~~	~~10.2mm~~	~~51mm~~	~~11mm~~	~~POF 2.2mm~~	~~DISCONTINUED~~
OH-31	0.472 +/- .001	11.80 – 12.02 mm	12mm	54mm	13mm	POF 2.2mm	Large Diameter Led
OH-34	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	51mm	9mm	POF 2.2mm	For use with RGB Analyser, 90º, Low Intensity
OH-34A	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	51mm	9mm	POF 2.2mm	For use with RGB Analyser, 90º, High Intensity
OH-36	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	51mm	9mm	POF 2.2mm	For use with RGB Analyser, Low Intensity
OH-36A	0.315 +/- .001	7.975 – 8.026 mm	8.00mm	51mm	9mm	POF 2.2mm	For use with RGB Analyser, High Intensity

Feasa continues to develop Optical Heads for new applications. We can provide specialised customer solutions when possible. Please contact Feasa if you require advice or assistance on Optical Head design.

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Clean the Feasa Optical Head or Glass Fiber

Using Cotton swabs (*Farnell reference* https://ie.farnell.com/chemtronics/ct100/cottontips-100-per-pack/dp/3498266?MER=sy-me-pd-mi-alte), dip the swab into Isopropyl Alcohol and Gently clean the end of the optical head or Glass Fiber using the swab until all dirt or contamination is removed from. Do NOT immerse the optical head in the Isopropyl Alcohol. The cleaning procedure should be repeated when necessary.

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